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THE PROTEAN MANIFESTATIONS OF DISEASE OF THE CORONARY ARTERIES.*

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The identification of various forms of heart disease is still shrouded by considerable uncertainty owing to the lack of an adequate and acceptable classification. An ideal classification of heart disease not only necessitates an accurate statement of lesion type but the incorporation of the etiologic process.

The term chronic myocarditis is still commonly used to denote a variety of affections of the heart muscle. In its correct sense this term of course indicates an inflammatory and therefore an infectious disease of the myocardium, which in reality is relatively rare except in association with endocardial valvular disease. In order to justify the diagnosis of myocarditis the pathologic changes must be irrevocably linked with an infectious cause, and they must conform to those resulting from the invasion of micro-organisms. These changes comprise interstitial lymphocytic or polymorphonuclear infiltration, abscess formation, Aschoff nodules and parenchymatous changes. In most cases in which the clinical diagnosis of chronic myocarditis has been made, necropsy fails to substantiate the diagnosis. Most of these cases in reality are disorders of the myocardium dependent on coronary sclerosis, hypertension or hyperthyroidism.

In this paper I shall limit myself to diseases of the coronary arteries and attempt to show the diversity of clinical types that result. Patients with these lesions are frequently said to have chronic myocarditis.

This study is based on seven hundred unselected cases of coronary sclerosis and the data accumulated are based largely on clinical observations and also on necropsy findings when available. The necropsy data are based on one hundred seventy-five cases, not all of the cases occurring in this series.

SEX INCIDENCE.

The predominance of males is rather striking. There were five hundred seventy-six males and one hundred twenty-four females in the series. The predominance of males is probably due to the fact that they, as a group, are subjected to greater stresses and strains in their journey through life than are women. If one thinks of the great burden assumed by the heart during the span of life of an indivdual it is readily appreciated that the coronary vessels are subjected to imponderable stresses. It is also probable that severe acute infections or chronic foci of infection may play a part in arterial injury. This presumption, however, still requires expermental verification.

AGE INCIDENCE.

Coronary sclerosis is notoriously a disease of middle and later life. Eighty per cent of the cases in this series occurred

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in the sixth and seventh decades; two hundred sixty and three hundred one cases, respectively. However, we have records of three patients in the third decade in whom marked coronary sclerosis existed. In one case death occurred from coronary thrombosis with attendant myocardial infarction. The clinical diagnosis in all instances was verified by necropsy.

CLINICAL TYPES.

It is not uncommon for the terms coronary sclerosis and angina pectoris to be regarded as synonymous; yet clinical and pathologic correlation of a large series of cases of coronary sclerosis has revealed the association of anginal attacks in only 40 per cent.

Angina pectoris type.—Before discussing angina pectoris it is necessary to define my interpretation of this term, since it is used to denote different conditions. It is sometimes used to designate a definite disease with a clinical syndrome and characteristic pathologic lesion, or it may be used to designate a syndrome that may occur in many diseases.

Heberden was the first to describe angina pectoris. His description, published in 1768, stands as a classic in medicine. In his original treatise he says: "There is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind of danger belonging to it, and not extremely rare, which deserves to be mentioned here at length. The seat of it, and sense of strangling and anxiety with which it is attended, may make it not improperly be called angina pectoris.

"They who are afflicted with it, are seized while they are walking, (more especially if it be up hill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life, if it were to increase or to continue; but the moment they stand still, all this uneasiness vanishes.

"In all other respects the patients are, at the beginning of this disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of os sterni, and often more inclined to the left than to the right side."

With the passing of time other observers deviated from Heberden's classical description and such terms as "false angina" or "psuedo-angina" were, regrettably, introduced into medical literature. These terms mean absolutely nothing. Eventually further subdivisions were made and the terms "hysterical angina," "toxic angina" and "vasomotor angina," led to such confusion of types that the true issue was almost hopelessly submerged. During the last decade, however, some degree of order has been restored, chiefly through the efforts of Mackenzie and Allbutt. Although these observers did not agree as to the anatomic lesions responsible for angina pectoris, each attempted to revive the original definition of Heberden and to limit the term to the disease which he had so clearly described. The diagnosis of angina pectoris does not present problems greater than those encountered in any disease, in fact they are often much less perplexing, and it is absolutely necessary to abolish irrevocably such terms as false angina or pseudo-angina pectoris.

Jenner first associated angina pectoris with diseases of the coronary arteries, while Huchard believed that involvement of the coronaries or the aorta, particularly if the coronary orifices were encroached on, were the anatomic causes. More recently Allbutt formulated his concept that angina pectoris is due to disease of the thoracic aorta, particularly of the root of the aorta and with involvement of its outer investment. He even stated that the coronary arteries and the myocardium had nothing to do with the pain of angina pectoris. Mackenzie, contrary to this view, held that in angina pectoris the symptoms were produced by fatigue of the heart

muscle and he emphasized the rôle of coronary and myocardial disease.

In the careful analysis of these opinions and the addition to them of experience based on clinical and pathologic correlations, it is impossible to relinquish the hypothesis of coronary disease in the production of angina pectoris. This view gains material support by a consideration of the characteristic syndrome, dominated by the severe pain, that ensues following the sudden occlusion of a coronary vessel. Mackenzie's theory of the production of cardiac pain has great breadth and perspective and is, in fact, the only theory thus far submitted that explains cardiac pain under all known pathologic conditions.

In this series of cases there were two hundred eighty-two patients (40 per cent) with angina pectoris, two hundred forty-seven males and thirty-five females. A detailed description of the symptoms of these patients would be a mere repetition as the majority presented the classical syndrome so vividly as described by Heberden. In some cases, however, the radiation of pain was bizarre, at times extending into the next, head, back, or abdomen. The abdominal pain offers considerable diagnostic difficulty, as the attacks may at first appear to be due to some surgical abdominal disease. The importance of correct diagnosis is apparent.

A general idea of the mortality from angina pectoris is afforded by the fact that 47 per cent of a series of patients with this disease died during a period of five years. In another group, in which the data were based on necropsy findings, death had occurred suddenly in 83 per cent of proved cases. Death from angina pectoris may occur in several ways. It may occur suddenly in the first attack, without antecedent symptoms; such a death is still quite generally ascribed to "acute indigestion" or "ptomain poisoning," although in reality it is usually the result of acute obstruction of a coronary artery by an embolus or thrombus. Death may result from progressive myocardial failure after several months or years of anginal attacks, and not infrequently the terminal picture is that of congestive heart failure. The attacks of angina pectoris may be supplanted by paroxysmal seizures of severe dyspnea, frequently nocturnal, and death may finally result from myocardial failure. Occasionally the angina attacks cease spontaneously and death occurs from some disease unrelated to the cardiovascular system.

The limit of time precludes a discussion of acute obstruction of the coronary arteries, the result of embolism or thrombosis, an unusually interesting and significant phase of coronary disease.

Myocardial failure type.—The syndrome of progressive myocardial failure occurs in about 53 per cent of the cases of coronary sclerosis. In the milder forms the syndrome is manifested by dyspnea on exertion, and in the more severe forms by congestive heart failure. This group does not include angina pectoris. Such cases have been and still are, to a certain extent, diagnosed chronic myocarditis, which is obviously fallacious since the pathologic process is not inflammatory but the result of chronic and usually progressive impairment of circulation of the myocardium. As a group the patients show less marked sclerosis of the coronary vessels with much less tendency to obliteration of the lumen than do those who suffer from anginal seizures.

Two factors apparently definitely influence the heart muscle in coronary sclerosis: the degree of arterial obliteration, and the length of time that the circulatory impairment has existed. The resulting pathologic picture is a rather diffuse or patchy myocardial fibrosis.

Three hundred sixty-eight cases of coronary sclerosis presented the myocardial failure syndrome. Two hundred eighty-

nine of the patients were males and seventy-nine were females. The course of the disease was variable. If the disease is recognized early, before considerable damage has been done, and if a proper cardiac regimen has been instituted and strictly adhered to, the chance of realizing a normal life expectancy is reasonably good. The more advanced cases invariably progress. Experience in the Mayo Clinic has shown that death from progressive heart failure occurs in about 64 per cent of the latter, while it occurs from sudden heart failure in about 36 per cent. Occasionally these patients have attacks of angina pectoris but these are more infrequent than the attacks of paroxysmal dyspnea, the so-called cardiac asthma; the latter phenomena are of sufficient importance to discuss more fully.

Embolic phenomena occurred during the terminal stages of heart failure in 13 per cent of the cases, as proved by necropsy. In comparison, embolic manifestations in chronic endocardial valvular disease, particularly with mitral stenosis, occurred approximately twice as often.

Paroxysmal dyspnea type.—In a certain group of cases of coronary sclerosis the dominant symptom is paroxysmal dyspnea, frequently nocturnal, that is precipitated when the patient is at complete rest. This syndrome is often, and justly, referred to as cardiac asthma. It occurs not only with coronary sclerosis but apparently also with other forms of cardiac disease. Pulmonary edema is not a constant accompaniment. Pratt has recently published a comprehensive discussion of cardiac asthma.

In the present series this group comprised fifty cases. Forty of the patients were males and ten were females. Thirteen were in the sixth decade of life, twenty-four in the seventh, and thirteen in the eighth. There was an early high mortality in this group, the paroxysms of dyspnea occurring with advanced cardiac disease.

Occult type of coronary sclerosis.—In this group of cases there is little or no diagnostic evidence of coronary sclerosis during life. For want of a better term these are referred to as the occult type. They are usually identified by the pathologist. Osler called attention to the fact that in a certain proportion of these cases the heart sounds are clear-cut, the pulse is good, and there are no obvious signs of cardiac disease in spite of extensive disease of the coronary arteries. Data in the Clinic bearing on this group are based entirely on necropsy findings. Most of these patients were in the later decades of life, and had outstanding complaints referable to other parts of the body, such as nephritis, diabetes mellitus, carcinoma, hepatic cirrhosis or prostatic hypertrophy. It may be that we, as physicians, are overzealous regarding the patient's outstanding disease and are somewhat negligent in our appraisal of the body as a whole. It was shown at necropsy that the patients in this group all died from causes unrelated to the heart.

SUMMARY.

This series comprises seven hundred unselected clinical cases of coronary sclerosis. Additional data with regard to this disease also were obtained from one hundred seventy-five necropsies, although all the cases coming to necropsy were not considered in this investigation.

There were many more males than females, the ratio being approximately 5:1. Eighty per cent of the patients were in the sixth and seventh decades of life.

The cases were divided into types according to clinical manifestations: (1) angina pectoris, two hundred eighty-two cases (40 per cent): (2) myocardial failures, three hundred sixty-eight cases (53 per cent): and (3) paroxysmal dypsnea, fifty cases (7 per cent). There were also a group of cases which presented little or no diagnostic evidence of coronary sclerosis, referred to as the occult type.

BIBLIOGRAPHY.

1. Allbutt, T. C.: Diseases of the arteries, including angina pectoris. London, MacMillan, 1915, ii.

2. Heberden, Wm.: Commentaries on the history and cure of diseases. Philadelphia, Barrington & Haswell, 1845.

3. Huchard, H.: Traité clinique des maladies du coeur et de les vaisseaux. Paris, O. Doin, 1899, ii.

4. Jenner, Edward: Quoted by Hirschfelder, A. D.: Diseases of the heart and aorta. Philadelphia, Lippincott, ed. 3, 1918.

5. Mackenzie, Jas.: Angina pectoris. London, Frowde; Hodder and Stoughton, 1923.

6. Osler, Wm.: The principles and practice of medicine. New York, Appleton, 1919.

7. Pratt, J. H.: Cardiac asthma. J. A. M. A., 87: 809-813, 1926.

DISCUSSION.

Dr. A. E. Fossier (New Orleans): I am very sorry that I did not have the opportunity of reading Dr. Willius' paper, so in justice to myself, I must state that it is very difficult to discuss intelligently such a broad and protean subject unless it is known beforehand, which of its many phases will be presented by the essayist.

Our concept of the etiology and pathology of cardiac disease is gradually changing. The classical symposium on angina pectoris by Wenckebach, Allbutt and Mackenzie, the works of Danielopolu of Bukarest and Gallavardin in France, have greatly contributed to the present knowledge of angina pectoris.

I wish also to give the credit due to our distinguished guest, Dr. Willius, for his electrocardiographic studies on coronary diseases, which have proven to be a valuable contribution to the knowledge of the subject.

Authorities formerly contributed great importance to disturbances of the coronary circulation. Their chief consideration was its effect on the heart muscle. Modern research has opened a new aspect and demonstrated its effect on the conductive system of the heart. We know today that even the slightest circulatory defect, must cause trouble, particularly when localized in the highly specialized centers which are nourished by the terminal arteries of the coronary system. When located in the bundle of His these miorragic accidents immediately assume great importance, but in the myocardium, these little foci (miliary) often remain without clinical significance. In order that coronary diseases should give clinical signs they must invade the larger arterial branches and spread out in the numerous dividing branches.

Large infarcts end rapidly in death, or may terminate in the formation of aneurysm. But the myocardium is progressively weakened by these small foci, or infarcts, which cause a progressive softening of the muscle and finally produce the syndrone of left ventricular insufficiency, which is characterized by a progressive subacute evolution, by the absence of arterial hypertension and by an alteration of the pulse. Whenever these same lesions occur in the auricles, rhythmic troubles ensue.

These small infarcts give an interesting protean manifestation. Among the smaller infarcts, a most interesting form, and that is, the small endocardial infarcts with consecutive cardiac thrombosis. These were recognized by Gallavardin and Destardeau as infarcts of embolism formation. It is known that in aneurysm of the heart as well as in the fibrous spots of that organ, an endocardial reaction results, and the embolism is formed. In certain cases, it is the consecutive following of the embolism by the thrombosis, which dominates the clinical manifestations.

Occasionally myocardial necrosis appears first. It results from the obliteration of an auricular arteriole which terminated in a small sub-endocardial infarct. The same may result from venous or arterial thrombosis.

I wish to call your attention to the fact that every pain in the region of the heart is not due to angina pectoris. Very frequently, among many other causative factors, for some reason or other, vasomotor spasms may occasion these pains. Unless I have definitely positive symptoms, I am careful not to make a diagnosis of angina pectoris, whenever there may be pains in the region of the heart, because I fully realize what it means to a person to think that he is the victim of this treacherous disease.

Dr. G. R. Herrmann (New Orleans): It is a privilege to discuss a paper which embodies such elaborate and very extensive study as Dr. Willius has reported. I am sure his conclusions are much more conservative, perhaps, than mine might be under similar circumstances. The quibbling of terms is a thing that has been popular for the past decade. The term myocardial insufficiency certainly tells the truth as to the limits of our knowledge, but I think while we are revising terms we might just as well revise another term (as confusing and empirical as myocarditis) and consider the term cardiac pain rather than singling out a special group of angina pectoris. The condition discussed as myocarditis may quite possibly be the results of previous repeated infection the degenerative coronary sclerosis resulting from previous injuries similar to the renal lesions which

we call nephritis. With a clear conception of what we are attempting to describe, maybe it would be permissible to use the term myocarditis, although perhaps the other term is much more satisfactory.

I am sorry that Dr. Willius did not speak of his extensive studies of electrocardiographic records in these cases of coronary disease that he has mentioned. I am quite sure that he has figures on the subject and I would like to hear something about these statistics in his discussion. If there is any method that will give us information in these obscure cases, and especially the so-called borderline cases, I think it is the electrocardiographic method. Of course, I am an enthusiast on that subject and statements that I make must be taken with a grain of salt.

The radiation of the pain described in the atypical cases of cardiac pain that Dr. Willius mentioned, and concerning which I had hoped he would say more, struck me as peculiar in that he put abdominal radiation last. Perhaps because it is more spectacular, I have always felt that abdominal radiation was the more prominent one. Having had the opportunity of seeing a couple of cases go through to surgical operation for coronary thrombosis with abdominal pain, I think it was unduly impressed upon me, and I would be glad to hear the statistical ratio as to the various radiations. I think Dr. Willius mentioned abdominal radiation last in his series. Perhaps that was merely a typographic feature, but probably it was from a statistical point of view.

The question of the acute sudden cardiac failure is the one that I think we should emphasize in cardiac disease, because it is in such case that the abdominal radiation is quite common and there is likely to be surgical procedure if it is not kept in mind that coronary conditions may simulate those of acute abdominal conditions, and frequently do. I think in this instance, where there is any doubt, electrocardiographic study should be made. Certainly, an abnormal electrocardiogram would make internists hesitate long before advising operation. I am sure that we all feel our deep indebtedness to Dr. Willius for the data that he has given us on this large series of cases of coronary disease. We would appreciate very much any further statistical data that he has.

Dr. Randolph Lyons: I think we have had a great privilege in being able to hear the paper of Dr. Willius, because the subject of coronary disease is now very much before the medical profession. It seems to me at almost every meeting I have attended in the last year, we have had either a symposium or some papers dealing with the subject of coronary disease in some form. It appears that the condition is far more prevalent than it used to be. I say "appears" because we are not sure that this is strictly true. I think that we are becoming more and more educated on the subject of coronary thrombosis and we are detecting cases of it which we did not recognize before. I know that has been the case with me, and in looking over my past records I have found a number of instances that I put down as conditions of angina that I know now were coronary thrombosis. The milder forms of coronary occlusion, I think, will frequently be overlooked even now without the help of the electrocardiograph, and I certainly hope that, as Dr. Herrmann suggested, Dr. Willius will take up that point and tell us what he thinks is to be gained from the use of the electrocardiograph in helping to detect coronary disease.

Certainly, in a case that I have seen very recently and in which Dr. Herrmann has seen the electrocardiograms, I would have been in some doubt had I not had an electrocardiographic curve taken before the attack occurred, and then one taken subsequently. The curve taken before the attack of coronary thrombosis was practically a normal curve and the one taken since certainly was an abnormal curve. The attack itself was very similar to a type of acute indigestion. It occurred in a physician and he diagnosed it as being acute indigestion. He thought he had eaten something that didn't agree with him and he had a severe pain in his epigastric region with nausea and vomiting. The pain was somewhat relieved by a quarter of a grain of morphia, but not entirely, persisting for twenty-four to thirty hours. Following this he had slight temperature for four or five days and his white count was 9,000 the first day and went up to 13,000 two days later; the fifth day it was down to normal, the temperature was back to normal and the pain had all subsided. He was quite certain that it was a condition of acute indigestion or acute intestinal disturbance of some sort. I was suspicious from the beginning that it was a coronary condition. The blood pressure had in previous years been a little bit high and he had a slight enlargement of the left side of the heart; during the attack the blood pressure dropped 20 points but there was no pericardial rub. I think the diagnosis was correct as the electrocardiographic curves showed.

There are so many aspects of this subject that I think it is one which we can well discuss. I wish to thank the doctor for bringing it up.

Dr. I. I. Lemann (New Orleans): The manifestations of coronary disease are indeed protean. As has been repeatedly stated this afternoon, the accident of acute occlusion may very well be mistaken for some surgical condition in the abdomen. The situation is rendered more difficult by the fact that there are actual surgical conditions within

the abdomen that on their part simulate coronary occlusion. Such cases have been reported in the literature.

It has been my good fortune to be able to follow through a case very similar to the one related by Dr. Lyons where the symptoms were exceedingly mild and where, had it not been for the idea being uppermost in my own mind of a possibility of a coronary occlusion, and for the electrocardiograph study, we should have overlooked the situation. The manifestations were exceedingly mild from a clinical standpoint.

That leads me to say that the old descriptions of angina and of coronary disease in general must undergo considerable change in the light of newer knowledge. Certainly, it is true that patients with very extensive coronary occlusion leading to a fatal issue are not, as we have been told in the past, immobile—that they stay absolutely quiet, that we are not to consider a patient as suffering from angina who is thrashing about in bed. I reported here in the meeting of the Parish Medical Society a few weeks ago some cases. One of these patients, Dr. Lyons will recall very vividly, as he was also associated in the case,—a man who insisted on walking around the room while he was actually pulseless and it took two or three people to try to restrain him and that within a few hours of death.

Nor is the sense of impending death essential to the picture. I saw a few months ago another patient whose case I reported here recently, a man who had no realization of impending death and who all the time attributed his sufferings to acute indigestion.

I think all of these newer observations and particularly the very valuable electrocardiographic studies have contributed to a new conception of angina; that is, new in the idea of putting aside, as Dr. Willius has said, the idea that any angina can be a pseudo-angina; also in putting aside these false notions that a man cannot have angina or a coronary occlusion if he is not in fear of death and if he is not absolutely immobile.

Dr. Willius (in closing): From our experience with electrocardiographic studies in this group of cases, I think I can say the electrocardiogram is positive in from 60 to 75 per cent of cases, that is, if conditions such as bundle branch block, complete and incomplete heart block, are considered.

A great deal of confusion exists with regard to acute coronary occlusion. We should not put too much reliance on the electrocardiograph. For instance, the electrocardiogram may be normal in patients who die within a relatively short time. I have in mind several instances in which the electrocardiogram remained normal for forty-eight, fifty and sixty hours after the occlusion occurred. Yet many times the progress is far more rapid. I remember one man of whom we had normal records in whom a severe attack developed and within a relatively short time after the onset of the attack, I believe fifteen or twenty minutes, the electrocardiogram was normal. Twenty minutes later there was marked abnormality and the patient died within an hour of the onset.

We should train ourselves to be strongly suspicious of a coronary accident even without the aid of the electrocardiograph. Of course, it is extremely satisfactory to secure the abnormal curves in such cases.

The prolonged duration of the attack I think is rather significant; gradual relief from the use of morphine; practically no relief from the nitrites; severe attacks lasting as long as ninety hours. The slight elevation in the temperature, of course, may be misleading; the increase in leukocytes may also be misleading. As we palpate the abdomen of these patients the sense of resistance many times encountered, apparently is a sort of protective mechanism carried out through a semisplinting action of the diaphragm.

A study of the leukocytes, as Dr. Lyons has emphasized, has been valuable to me. You will recall that he says the progressive increase in leukocytes with the high polymorphonuclear count, indicates one of two things: either progressive myocardial necrosis, or the presence of intraventricular thrombus, or both, and it is important to know from the standpoint of prognosis whether or not even at the end of a week you are suddenly going to lose your patient either through a rupture of the heart or the development of an embolism usually cerebral.

ULTRAVIOLET RADIATION.*

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and
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The purpose of this paper is to bring to the attention of the audience one of the newer forms of physical therapy, actinotherapy or ultraviolet ray therapy, and to emphasize by the results of our own experience its value in a very few of its indicated fields of usefulness. We feel that

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our viewpoint may be the more valuable since it represents an about-face from a feeling of utter skepticism to our present feeling of genuine enthusiasm, and it is our desire to help, if possible, the conversion of some of those others who may have been skeptics as ourselves but who have only to give this remedy a fair, honest opportunity to convince themselves of its value.

The initial stimulus to the investigation of the value of light in the treatment of disease was given by the various men using sunlight and outdoor exposure, notably by Rollier. This work consisted in the gradual exposure of the body to increasing doses of sunlight, and the results of this work have been pretty thoroughly disseminated throughout the medical world. Finsen was the pioneer in the application of artificial light to the treatment of disease, and it was his work in the treatment of superficial tuberculosis at Copenhagen which forcibly impressed the medical public with the value of artificial light as a remedial agent. General radiation was begun with the use of the carbon arc lamp inasmuch as this was primarily the only satisfactory artificial source of ultraviolet rays, but following the development of the quartz mercury vapor type of lamp, its use has become more general, owing to its greater convenience and the more desirable character of the rays emitted by this lamp.

Some little consideration of differences between the principal sources of ultraviolet rays will not be amiss. Sunlight is particularly strong in the infra red or heat rays and luminous rays, together with an amount of ultraviolet rays running between 5 and 7 per cent. The output of the carbon arc lamp rather roughly approximates the radiation from the sun. From the mercury vapor lamp we get a quality of radiation relatively rich in ultraviolet, approximately four times the amount ordinarily found in sunlight. There is a correspondingly less amount of infra red and luminous rays. The ultraviolet rays of sunlight again are relatively somewhat longer than those of the mercury vapor lamp, altho the latter also contains these longer rays together with shorter rays, including some to which no therapeutic value is as yet attached.

However desirable may be the character of the combination of rays to be obtained from the sun, they are unquestionably subject to various distinct disadvantages. These drawbacks consist in the fact that ultraviolet rays are easily interfered with by conditions in the air over which we have no control, dust, water vapor, smoke, etc. The time of day as well as the season of the year affect them, noon sunlight being most favorable and, as a general rule, higher altitudes are more satisfactory and this not only because the limiting factors of moisture, dust and smoke may be absent. The necessity for direct, open air exposure owing to the unsatisfactory penetration of ordinary glass by ultraviolet rays is another limiting factor, as at many periods of the year even in this part of the country where climatic conditions are more favorable as regards temperature during the greater part of the year, open air exposure is a thing many of our patients would tolerate rather badly. The recent developments of newer forms of glass which permit the passage of larger percentages of ultraviolet have not been so satisfactory, as there still remain the other distributing factors limiting very frequently the quantity of natural ultraviolet rays in the air. We do not wish, however, to be understood to doubt the probable superiority of natural sun radiation wherever it can be employed satisfactorily, for we realize that the mercury vapor lamp is at best a substitute, differing very materially in the character of its radiation and certainly, if in nothing else, being notably lacking in the undoubted benefits of outdoor exposure.

Turning, however, to the artificial source of ultraviolet energy as affording a certain, routine and more or less exactly controllable and dependable means of therapy, it is primarily to the mercury vapor type

of lamp we would bring your attention. We do not wish to reflect in any measure upon the carbon arc lamp, but our desire is only to emphasize that upon which our experience of about fourteen months is based. Theoretically, convinced as we are of the sun radiation being the optimum, we are impressed by the components of the bundle of rays given out from the carbon lamp as being more nearly comparable to the sun. The one great determining factor in our choice was the fact that we felt that in our comparatively limited office space, the heat emitted by the carbon light would be undesirable and, again, the rather longer exposures necessary were to be considered.

Our interest further, in the scope of these remarks, has been confined to the air cooled type of quartz burner rather than to the water cooled, as we have been concerned with general rather than local radiation. The penetration of the rays from this type of burner is very short, and this has been explained on the score of the screening action of the hemoglobin. The longer type of ray which is obtained from this burner is readily absorbed and has the faculty of stimulating the metabolic processes of the entire organism. This is in general contrast to the rays of the water cooled lamp, one of whose especial properties is bactericidal.

Superficially, the effect of exposure of the body to the lamp varies with the time, distance and also somewhat with the complexion of the individual, blondes being distinctly more susceptible than brunettes. The skin reaction may vary from a slight erythema to a distinct burn of the first degree.

We have been particularly interested in the treatment of rickets by ultraviolet radiation, and we have now treated some 150 cases with practically uniform success. The value of this means of therapy was first brought out by Hess who initiated the hypothesis that there was an activation of cholesterol which is contained in considerable quantity within the epidermal portion of the skin and it is thence carried through the circulation to other parts of the body. Animal experimentation was shown to demonstrate conclusively the value of radiation, and the irradiated animals were readily protected from rickets even though upon a diet which quickly produces this affection. The value of actinotherapy in the cure and prevention of rickets is confirmed by the very distinct relation of its incidence to the ultraviolet content of the sun rays at varying times of the year. The peak of rickets incidence is noted in the late autumn and winter, gradually decreasing till it is almost absent during the period of abundant sunlight.

The cases of rickets which we have treated have been very carefully selected as definite cases, and practically all have been radiographically controlled in addition to the clinical diagnosis. A rather uniform technic of treatment has been adopted, continuing every other day for a period of 15 treatments. The initial exposure has been in all cases 45 seconds with a gradual increase to 5 minutes, after which, this length of time is maintained during the remainder of the course. The distance has been 30 inches. This initial dose may seem to some extremely conservative, but we feel that with young infants it is unwise to risk an erythema as they are difficult at the best to control and additionally, it is a problem at times to explain to the mothers that no possible damage to her child can have arisen from a transient erythema. The so-called "roentgenphobia" is becoming so prevalent of late that there is hardly a day that some patient does not inquire about the danger of a burn or require assurance that there can be no possible relation between the ultraviolet and roentgen-rays. The amount of pigmentation has been extremely variable, and has not seemed to bear any relation to the benefit received. In administering the treatments, we have entirely abandoned the use of protective goggles for the patient in favor of screening the eyes by means of a folded towel.

The child usually requires restraint and the towel can readily be held over the face and is much more sanitary than the goggles. Needless to say, during the treatment the patient is stripped and as a rule treatments are confined to the anterior surface of the body. One particular caution should be emphasized, the necessity of impressing thoroughly upon the mother or nurse accompanying the patient, the danger of looking directly at the unscreened lamp. We have had two annoying cases of conjunctivitis resulting from a neglect of such caution.

Improvement following the beginning of the treatments is usually rapid. The appetite improves, the color is better, weight is gained and a general sense of well being observed. One frequently noted symptom of improvement is the remark of the mother that the child rests so much better at night. This has been so frequent that it is felt that the treatment would be justified on this score alone. Beginning deposit of bone can be readily noted radiographically at an early date. As a rule only one series of treatments is required although there is no contra-indication to repetition in case there seems any need.

We have further noted remarkable improvement in some exaggerated cases of malnutrition, with progress taking place so rapidly and uniformly as to be almost unbelievable. The improvement here has been due to the stimulation of metabolism, it would seem, and the general building up of the patient's resistance has accounted also for the noteworthy results accomplished in some cases of furunculosis which have been treated. Certainly with children there seems to be no contra-indication of any consequence, and it is our feeling that any individual will receive definite benefit from a course of ultraviolet therapy.

We have in the quartz mercury vapor burner an agent for the satisfactory and dependable application of these rays which is not subject to any atmospheric or climatic conditions, and which can be safely applied by anyone who will give proper attention to a few small details. We have an agent which in numerous conditions will give us wonderful results and to whose use there seem few, if any, contra-indications. We feel that anyone who will give this means of therapy a fair trial in conditions within its scope will be as quickly convinced of its efficacy as are we.

DISCUSSION.

Dr. Ludo von Meysenbug (New Orleans): In my work with children I feel that I can endorse very strongly what Dr. Bowie has read in his paper. There is no question but that the ultraviolet ray from whatever source, whether from arc light, mecury vapor lamp or the sun, is a rickets cure. This has been proven, not only clinically, but experimentally.

A factor that must be considered in conjunction with the ultraviolet light and that cannot be overlooked in the successful treatment of rickets, of which we also have clinical and experimental evidence, is the diet. In a group of experimental rats used to demonstrate the value of the ultraviolet light and diet in rickets, separately and combined, it was found that if you give a rat a diet that will just protect it and remove the rat from the sunlight, it will develop rickets. Give the ultraviolet ray and the same diet and no rickets will develop. Give a rickets-producing diet with sunshine, the rat has rickets; give both, sunshine and an adequate diet, it is protected against rickets. This shows the interrelationship between light and diet—they act together.

Of a baby, the same thing is true. If you have a baby with rickets and treat it with ultraviolet light, making no attempt to protect it by diet, your results will be disappointing; you will get improvement, but not of the same character that you will if the diet is entirely suitable.

Another interesting feature Dr. Bowie touched on is the theory advanced by Dr. Hess, that is, the results produced by ultraviolet rays: activation of the cholesterol that is present under the skin and transportation through the body of this activated cholesterol by way of the circulation; he states that cholesterol under the arc light and ultraviolet produces a ricket-protecting substance in the perfectly inert cholesterol; this has been demonstrated with other inert substances, such as linseed and cottonseed oils. A very interesting experiment in that connection is one in which the skin of the cadaver was irradiated and fed to rats; it was found that the irradiated skin

was a protection against rickets, while the non-irradiated skin failed to protect against rickets.

As far as the use of the violet light is concerned, in my hands, I have been somewhat disappointed. In treating the mal-nourished baby, giving the ultraviolet light to improve the nutritional state, I have not been enthusiastic about the results. The ultraviolet light will give the baby a better color, increase the hemoglobin and the red blood count, but I have not seen it do much else. Perhaps my cases are too few and I cannot reach conclusions, but I have been a little disappointed in the light in that respect.

Dr. R. S. Crichlow (New Orleans): During the past four years in the U. S. Veterans' Bureau Dispensary, we have been using the ultraviolet light mercury vapor lamp, air cooled and water cooled, and while we have not tried it on patients suffering with rickets, we have had success in treating other conditions, especially erythemas of the skin. Pompholyx responds readily to treatment and so does eczema. On two different occasions we have used it on patients suffering with hydrocele. One of the cases I recall. The hydrocele was first aspirated and the patient subsequently subjected to a series of exposures, the initial exposure one minute, building up day after day until the maximum radiation of fifteen minutes was reached. We have been able practically to control the condition of hydrocele in this patient: I do not know how it would act in other cases, but in this instance the result is good. With the water cooled lamp in the treatment of ulcers we have gotten splendid results. In this condition you have almost to produce a burn to cure, pressing your lamp against the ulcer to get the desired effect. I have had wonderful success with ulcers of the legs and hands and ulcers which refuse to heal on other parts of the body.

We have also treated asthma with violet radiations. Quite a few asthmatics come to our clinic from time to time for treatment, and in several instances we have had very good results through the use of violet radiations. With asthma we have exposed the patient's chest thirty minutes to one hour. Good results have been obtained by daily treatment, from seven to fifteen consecutive treatments.

Dr. Guy A. Caldwell (Shreveport): I am interested both in the question of rickets and ultraviolet therapy in connection with these cases, therefore I have been watching the orthopedist and the pediatrist with these cases for some little time. We see mild cases at best, with mild deformities from rickets, and a few cases in the acute or active state.

I am so glad to hear that sunshine is best and that the nearer we approach that the better. It is our experience, working together, the orthopedist and the pediatrist, that there is ample sunshine to take care of these cases. We have established a routine which we give to the parents for administering sunshine to these children, and the results in the mild cases we see are excellent; however, in the more severe cases we would have to adopt a more intensive treatment. The treatment is similar to that of tuberculosis. Simply start the children out for five minutes at a time, three times a day, exposing the lower limbs only; let them play in the sunshine for that length of time without clothing. You cannot force a child to remain in one position—you can simply put him out three times a day. This is done for two days, on the third, fourth and fifth days you take off the garment; on the sixth and seventh days (depending on whether the child is frail or husky) roll up the shirt under the arms, but on the last days simply let them have a hat and play in the sunshine for increasing lengths of time until they get from an hour and a half to two hours in the open. Now, children take to that very well summer and winter; despite the fact that they do not get the sunshine every day, the results are good. It is perhaps more ideal if we can give it regularly, but in the country, where people cannot avail themselves of these things, I think we should give sunshine whenever possible, with the diet, which is as important as the heliotherapy. Both are important.

Dr. W. A. Lurie (New Orleans): I believe we are missing one point if we do not recognize the difference when treating the patient with solar rays. We are giving them an additional dose of ray force which, whether they get the actinic ray force in addition may or not, make a difference. It is distinctly the ultraviolet actinic ray that produces reactions when these rays are used. Just how it does it is a matter of conjecture and just what it does to each person is uncertain. With the lamps we have on hand we can obtain the result. Or we can do it with the light from the sun, under a proper technic.

I was interested in listening to Dr. Bowie's technique, and it brought to my mind forcibly that an overdose of actinic force is a disastrous thing. In his paper Dr. Bowie did not have time to tell of the possibilities there were with ultraviolet radiation. In the years I have used the ultraviolet lamps, air cooled and water cooled, I find they are indicated in every condition, if you understand the basic pathology behind the condition and you know what you want to do with your lamp, you will succeed in doing it.

It is a matter of technique. I have not treated as many cases as Dr. Crichlow, but I have been surprisingly successful in a series of ultraviolet radiations, in a great many refractive cases of trifacial neuralgia which I hope to report tomorrow. In these cases it is a matter of technique, the matter of dosage of ultraviolet ray. A patient may not respond because of an overdose, then again, may just as well not respond because of an ineffectual dose. There is one danger we must recognize, that is, if we have the apparatus, that fact does not give us the knowledge of the dose that is needed in special cases. I should perhaps have confined my remarks to rickets, or the subject of the paper, but this subject was brought up by others and I thought I would add a word to what had gone before.

I notice no mention was made of the raising of the calcium index. Some two years ago I had a series of patients in whom I tried to raise the index by means of diet, another series that I tried by means of ultraviolet radiation, and a third series, a combination of diet and ultraviolet rays. I found that the patients on diet alone did not do as well as the patients on diet plus radiations, and I found too that under radiation alone I did not build the index perceptibly over the series of control cases. This shows the wide range of possibilities and indications for treatment with the ultraviolet ray. As we understand the mechanism of these treatments and note results, we become more and more enthusiastic over the work.

Dr. A. J. Thomas (Shreveport): This is a subject that can bear discussion many times and from many angles. The ultraviolet, or actinic ray, is a form of energy, and as such is capable of transformation into other forms of energy. It is not necessary to have elaborate equipment; you can, with proper technique, probably get the same results with the air cooled generator as with the water cooled, but of course it is best to have both apparati. It a question in the final analysis of wave-lengths; it reverses itself from roentgen-ray radiation where the short rays produce the greatest effect, whereas in ultraviolet radiation the long wave-lengths have greater penetration. Use your short wave-lengths where you desire local or dermal effects, and the long wave-lengths for systemic effects. With proper technique this is easily accomplished. The uviarc of the ultraviolet apparatus generates both short and long wave-lengths while operating, for which reason during treatments it is necessary to filter off the short wave-lengths if systemic results are wanted. A metallic filter such as copper or aluminum cannot be used as this would filter off all actinic rays. Atmospheric air acts as a satisfactory filter, as air absorbs the short-wave lengths but does not arrest the progress of the long wave-lengths which reach the area to be irradiated. Using a tube-generator skin distance of forty inches, sufficient air space is interposed to filter off the short wave-lengths and the exact therapeutic dose is controlled by varying the time exposure. When treating dermal lesions it is essential to correlate your dosage of actinic ray with the pathology and the desired results. This is regulated by the time exposure and the focal distance, a working average being a distance of from three to fifteen inches from the actual applicator contact to a tube-generator skin distance. For practical clinical uses there are three doses: Erythema Prima, Erythema Seconda, and Erythema Tertia, the first is stimulative, the second is regenerative, and the third is destructive. In the treatment of Lupus Erythematosus and Lupus Vulgaris, screen off the unaffected part of the skin with two layers of towels, using about a ten-inch tube-generator skin distance with 90 volts across your generator, this will give sufficient actinic rays for a destructive dose, providing the time factor is correct. Before giving this treatment it is advisable to tell your patient that there is going to be a severe local reaction that will require from two to four weeks to clear up. The average case requires from two to five such treatments to produce a clinical cure, the ru'e being a recurrence of the lesion. Regarding the systemic actinic ray therapy it is not necessary to mention to you its indications, bear in mind diabetes and syphilis are contraindications. All other diseases should respond to this radiation with favorable results.

Dr. E. R. Bowie (closing): I have nothing to add in closing except to thank everyone who has taken part in these discussions and helped to stress the important points in this widely used therapy.

HEADACHES DUE TO REFRACTIVE, ACCOMMODATIVE AND MUSCULAR ANOMALIES.*

W. S. SIMS, M. D.,

JACKSON, MISS.

The problem of refraction and accommodation was worked out during the years of 1850 and 1858 by Donders. Up to this time there was very little known about this subject, and very little more up to the

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present day than was given to the world by Donders. Donders was a Dutchman, born and reared in Holland, receiving his medical education in Germany.

In presenting this paper I wish to say first of all that I have nothing new or unheard of, and my only excuse for this paper is to emphasize the importance of this common affection and the adoption of proper measures for its relief.

Headaches of an ocular origin may be classified as refractive errors—as hyperopia, myopia, astigmatism, accommodative and muscular anomalies.

Eyestrain has many and various symptoms, but the one that causes the patient to seek relief is usually headache. Headache caused by eyestrain is usually frontal or frontotemporal and may, and often does extend to the occiput, and is sometimes accompanied by all kinds of nervous manifestations. The most characteristic distinguishing feature of ocular headache is that it comes on while using the eyes, and gradually grows worse as the use of the eyes is persisted in, and gradually ceases after a few hours rest, and, as a rule, is never present upon waking in the morning. There are a few exceptions to this rule, particularly if the eyes have been subjected to strain the night before up to a late hour. Vertex headache, or a feeling of weight on the top of the head, has been "Pre-empted by the Gynecologist", and is not usually classed as ocular In fact all headaches have some distinguishing features.

Treatment consists in prescribing such lenses as will make vision distinct and enable the patient to use the eyes without pain or discomfort.

It must be remembered that the existence of a refractive error is no indication for glasses unless the patient is suffering more or less discomfort as a result, except for the cure of a squint or to prevent the further progress or increase of myopia. When distant vision is perfect and comfortable, and the patient does not suffer from any symptoms except when engaged in near work, glasses may be omitted except for near work.

The proper treatment is to refract the eyes under a cycloplegic, especially in children and young adults. It is the only means at our command to do efficient work in a majority of cases. Of the many cycloplegics, atropin and homatropin are in general use and the two supply a means to meet every indication. Why are cycloplegics absolutely necessary in a majority of cases to do efficient refractive work? First, it gives the eyes a much needed rest, and gives the retina and choroid an opportunity to recover from irritation and congestion incident to eyestrain. Second, it puts an over-active ciliary muscle at rest and enables us to estimate the exact amount of error possessed by the patient. Third, in astigmatism, we are not only able to estimate the amount but the axis of the cylinder as well.

The next structure that calls for a a very careful examination is the ciliary muscle or the muscle of accommodation. If the test is found to be below the normal limit for the age, there must either be a latent refractive error or the accommodation must be actually subnormal. This deficiency in accommodation may itself be the cause of the symptoms which had been ascribed to the refractive error and had not been relieved by its correction. These patients are as a rule physically and mentally depressed. In these cases it is best to have the advice of the family physician as their physical and nervous condition claims equal, or more, attention than treatment directed to the eyes.

A most interesting case of ciliary breakdown came under my observation only a few months ago. A lady, aged thirty, suffered greatly during the first few months of her pregnancy from nausea. She had a long and tedious labor, leaving her completely exhausted. Her physician prescribed a suitable diet and rest in bed; but

he overlooked the all important matter of giving her eyes also absolute rest. Without this advice she read a good part of every day, and about the ninth day her eyes gave down and she was able to read but a few minutes at a time without suffering greatly with her head. I saw her about this time and prescribed absolute rest of the eyes and full doses of strychnin, and the ciliary muscles are now regaining strength and an early and complete recovery is expected.

One other, and a very common condition that we must always look for is a want of equilibrium or balance of the extrinsic muscles. The eyes have a constant tendency to deviate, and it is only by force or increased innervation that binocular single vision is maintained. It is easy to make a diagnosis of this condition when we bring into use the screen, prism and Maddox rod test.

Treatment consists in correction of the error of refraction, if found, as error of refraction is the usual cause. We do meet with cases of this kind sometimes that do not yield to this treatment. We then resort to prisms and prism exercises, and as a last resort, operation. We must not be too hasty to operate for this condition, as operations are often disappointing.

The three abnormal conditions of the muscles are known as heterophoria. The principal subdivisions of this condition are known as exophoria, tendency to deviate outward; esophoria, tendency to deviate inward; hyperphoria, tendency of one eye to deviate upward—right hyperphoria, when the right eye tends to deviate upward—left hyperphoria, when the left eye tends to deviate upward.

In exophoria, the symptoms are more pronounced after using the eyes for near work; in esophoria with distant vision.

In hyperphoria we may suffer both from near and distant use. Three patients that recently came under my observation will serve to demonstrate this muscular anomaly:

Case 1. Mr. C., aged 28, said he had been fitted twice with glasses, but had not received any relief from his headaches. He said he suffered no discomfort except when he attempted to read, and that he had given up reading altogether on account of his eyes. I found on examination that this patient was suffering from exophoria, or a tendency of the eyes to turn outward. I gave him his full correction under the influence of a cycloplegic and followed with prism exercises with perfect relief of his muscular asthenopia.

Case 2. Miss M., aged 17, found no difficulty when engaged in her school work, but when out in the open or at a picture show or church, she suffered greatly from headache. I have never been able to get results from prism exercises for esophoria. I have of late, if the ametropic correction does not give relief, prescribed prisms for temporary use, when using the eyes for distance.

Case 3. Mr. B., aged 40,—suffered more or less with his eyes for a great number of years, and had never been able to get glasses to suit. On examination I found his trouble to be right hyperphoria. Prisms combined with his ametropic correction gave him great relief.

It is a regrettable fact that this important branch of medicine is not recognized and appreciated by the general public as its importance deserves. We are not in possession of anything that serves us better than our eyes, and certainly they should receive our very best care and attention.

I want to call special attention to two conditions that are often seen among children, namely, squint and myopia. Squint in most cases is due to refractive errors, and a certain line of treatment carried out until the child is old enough to wear glasses will usually correct the defect. This treatment to be effective must not be delayed beyond the sixth year. Beyond that age nothing less than an operation will relieve the condition.

Myopia, in most cases, is an acquired condition, and usually makes its appearance early in life. Statistics seem to prove that the full and early correction of myopia tends to check the progress of a condition that too often leads to blindness.

The following is largely copied from Fuch's text book on ophthalmology, and has the endorsement of all who have given this subject special attention.

"First the excess of work which many pupils have to struggle with should be reduced to the proper standard. The way in which pupils are overtasked both in school and at home is prejudicial not only to the eyes but also to the child's whole mental and physical development. Instruction ought not to begin too early, not before the completion of the sixth year. And more time should be allowed to bodily exercises especially in the open air. That amount of work which absolutely has to be done should be done under the most favorable conditions. Good illumination of a sufficient strength and falling upon the work in the proper direction, mainly from the pupil's left side. By observing these precautions we lessen the tendency to eyestrain, and as a result headaches as well as the development of myopia. Books having too fine print, and also fine fancy work for girls, should be banished from schools forever."

The delicate child that is forced to sit at a piano two to three hours after school hours, too often terminates in a real tragedy. I say this advisedly as I have had ample demonstration in the past to warrant me in making the above statement. A brief report of the following case is one of the many that has come under my observation.

A young girl in the ninth grade whose mother was very exacting was required on her return from school to practice at a piano two hours. A short interval was allowed for rest, and then she had to prepare her lessons for the following day. This girl had a complete breakdown and was put under the care of her physician. I saw her about this time with her physician and found her very nervous with every appearance of a very delicate child. She gave a history of almost constant headaches when engaged in her work. I suggested to her attending physician that we refract her eyes, which was immediately done under a cycloplegic. She now finds perfect relief from her headaches, and together with the care of her physician she has fully recovered her health.

As I have said, I have nothing new and my only object in presenting this paper is to emphasize the importance of a careful examination of the accommodation and muscular errors in every case of refraction.

DISCUSSION.

Dr. B. S. Guyton (Oxford): My experience with school boys and girls seems to be that the most frequent cause of headache is hyperopia or astigmatis. I think we have that type much more frequently than we do headaches from pathological changes. I find a good many cases where I think they need prisms. I do not use prisms a great deal, not as much as I used to, but I think you can use comparatively weak prisms in some cases and get a great deal of good from them, especially in cases of exophoria and hyperphoria. Somehow I have never gotten much good from muscle exercises. This is a very important paper and I am glad to have heard it read.

Dr. W. S. Sims (closing): I do not know anything that I can add to the discussion. I thank Dr. Guyton for his expressions.

SOME OBSERVATIONS WHICH MAY HELP IN A BETTER UNDERSTANDING OF THE PROBLEMS OF OUR MENTALLY ILL.*

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Believing that the problem of our mentally ill is a gradually increasing one; that it is a vital problem in the minds of most physicians; that it is not as well understood as it might be; that it is a problem for the state to a large degree; that its causes are many and that their understanding requires a knowledge of almost everything which modifies human existence, and that a theory based upon accurate observation may bring us as near the truth of the situation as any means we have at the present time, especially as the mind is not capable of being demonstrated satisfactorily through laboratory methods and that some preventive measure is the only remedy by which we may hope for

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much relief, I have set down some of the results of these observations.

In order to make these remarks as clear as possible, I believe we may divide mental illness into three general groups: first, those mental diseases which we find in association with organic conditions, as cerebral arterio-sclerosis, pellagra, endocrine disturbances, syphilis, chronic alcoholism, etc.; second, those mental disturbances for which we know no organic association, the so-called "functional psychoses," as dementia praecox, maniac depressive insanity and the psycho-neuroses; and, third, those conditions which are classified as mental deficiencies.

It would seem that the mere knowledge of the fact that a mental disease is brought on by associated organic disease would, by that very fact, suggest a remedy for its prevention, and this is probably true. However, these conditions are on the increase as are other mental conditions. This fact would seem to indicate that we probably have not given the serious thought to these organic conditions that we should have. For instance, it is well known that the cause of syphilis is infection by the spirochete. This being true, we should be able to find some method of preventing it, and I believe this method could be found if the proper steps were taken. The elimination of this one disease alone would cut down our hospital admissions quite a noticeable degree. Pellagra, I believe, is considered to be due to a lack of a balanced diet, or at least an improper diet. If this is true, does it not seem reasonable that this disease should also be prevented? This would also eliminate from the admission to state hospitals quite a percentage of cases. The same may be said of many other of the associated physical diseases. Of course, some of these physical illnesses are not well enough understood for us to do very much in the way of prevention, but it seems to me that we could do more than we are doing in the way of preventing almost all of them. Any method of preventing these physical conditions which I have named suggests at once quite a variation of endeavor. For instance, if we are to prevent pellagra, it must be done through the individuals affected. This of course would lead us immediately to the homes and schools, the immediate environment of the individuals, and finally, in some instances at least, a remedy would have to be found for the economic conditions. This method of attack would of course apply to most of the other diseases in this group. So it is at once observed that the remedy for the situation in these conditions would necessarily mean the coöperation of many agencies, and would become in the last instance a problem for the entire state. This work could, it seems to me, be best carried on through and by the State and local Boards of Health. When we realize that approximately 18 per cent of such cases are shown in the first admissions to state hospitals it will be seen that it would be worth while to consider some method of eliminating as many as possible from our institutions. It would be economy in the end, besides the fact that it would add a great deal of useful human activity to the world. So much for the organic cases.

What may be done in the way of a prevention or cure of the functional psychoses? These are probably the least understood of all mental troubles and comprises approximately 50 per cent of our first admissions, and a still larger per cent of our daily population. It may be stated with accuracy, I believe, that there is very little to be hoped for in the way of a cure for most of these cases. Some of them can be helped and seem able to adjust themselves to a certain degree, but very few are ever entirely cured once this condition has progressed to the degree where they have to be institutionalized. From this statement, it seems that if anything is ever to be done which will materially help, it will have to come through prevention. I believe we can better understand the situation if we look at these mental conditions in a comparative way, that is, try to compare the so-called

abnormal mental reactions with the normal.

If we think of this kind of a psychosis simply as a method of reaction to life's problems, just as conduct is the method of reaction of the normal individual to the problems of life, I believe we will be able to see considerable likeness. For instance, the normal individual has periods in which he is grief stricken, angry and acts on the impulse. He has doubts, uncertainties, hates, loves, suspicions, happiness and despondencies. He reasons, reaches conclusions and acts. He has beliefs, and these beliefs are a result of all of his knowledge and past experiences. Many of his conclusions are wrong. Many of his acts are erroneous; many of his beliefs are false, because they are founded on improper knowledge, or because they are colored by an unconscious prejudice. Many of them cannot be supported by sound logic or facts, yet he holds fast to them, even to the peril of his existence sometimes. The fact is that none of our lives are logical. We are governed to a very great extent by the emotional values which we give to the circumstances of life. This is as it should be, for if we were cold, logical beings, all people and all things would have the same value. Our conclusions and reactions depend upon the value we give to the facts or circumstances which go to make up the material from which these conclusions are reached. The deviation from normal will be in direct proportion to the difference in our own evaluation, and that of society in general. Furthermore, the normal mind is capable of imagination, fancies, and day dreams. It has wishes and desires, and many of these are satisfied temporarily by these imaginations and fancies. Many of us have thoroughly defeated our enemies by such processes of the mind. Many of us have felt the presence of our loved ones by the same mental processes. While these mental processes are taking place, we manifest their presence by our peculiar reactions. Usually there is evidence of it in the facial expressions, in the vaso-motor reactions, and sometimes by actual gestures with our hands, and occasionally by laughing aloud or talking to ourselves. In many people these things become a habit, and therefore a part of the personality of the individual, and, to his close friends, this individual is considered very peculiar and sometimes quite amusing. Of course, in the normal mind this condition is temporary, and the individual is able to bring himself back to reality when the occasion demands. Nevertheless, it is our method of accomplishing a desire, or wish, or ambition, which, if accomplished in fact instead of fancy, would lead us into difficulty. The fact is, these reactions take place because we are inclined not to want to face the actual fact at the time. It is nature's method of letting us realize our desires without causing trouble. Another thing which should be mentioned in this connection is that one normal individual may be successful in one particular line of endeavor, while another who has just as much intelligence may be a total failure in that particular work; while the one who fails in that particular work may be eminently successful in another line of endeavor. In other words, no two individuals are able to adjust themselves to the same thing, or to the same way of living, in an equal degree. There is that same difference that we find in different human beings. Life from birth to the grave is made up of adjustments, and the population of our state hospitals is composed of those individuals who failed to properly adjust themselves.

If, now, we think of the natural reactions of the mind as outlined, above, and which we know as temporary phenomena, and consider what the result would be if any or all of these peculiar phenomena should become chronic and fixed, I believe we shall be able better to understand the functional psychoses. For in reality that seems to be what takes place. These individuals are in a chronic mental state of fancies, imaginations, laboring under doubts and uncertainties, have chronic

beliefs founded on fears, improper perceptions or perceptions colored by insufficient or misleading information or profound prejudices, or they have taken advantage of some of the primitive methods of reactions, because they cannot or will not face the facts of life. The thing that causes these individuals to seem so peculiar and unreal is that the chronicity of this condition brings about a lack of normal interest in the outside world, and they become mentally deteriorated, simply because the mind is occupied in one channel only. In other words, almost all the abnormal reactions which I have observed in these individuals, have their miniature duplicate, temporarily, in the normal individual. Certainly we react as we do because of one of two things or both. Namely: instincts are the inborn qualities of the mind, or those qualities of the mind which are obtained through our perceptions. That is to say, nothing, except our instinctive reactions, ever come out of the mind that has not previously gone into the mind through our perceptions. If, then, this conception of the situation is correct, can we not conceive of a remedy which will at least help in lessening the number of such individuals? A training which would teach them very early in life to face and overcome the facts and realities of life in a civilization such as ours. Their failure is a failure of proper adjustment. Anything, then, which may be done that will help the individual to a better adjustment to life's problems will tend to prevent these chronic mental conditions. Such a conception as this, of course, will lead to a very wide field of endeavor. It will lead directly to the home, the school, the social condition surrounding the individual and the economic condition. It may also lead us to change some of our own ideas, for we must, as scientific men, keep our minds open to the point of acceptance of what our observations show us to be correct, but if it will help in solving the difficult problem of these individuals I believe it will be worth our effort.

We know that the minds of children are very capable and very apt in accepting training. It is extremely difficult for any mind completely to get away from its early training. A habit of any kind once formed is difficult to get rid of. This being true, it seems reasonable to believe that many of these minds, even though they are somewhat peculiar, could profit a great deal in the business of living if they were properly trained, and formed the proper habits of life early. It also seems reasonable to believe that they could be helped in many instances by directing their peculiarities in such a way that they would not lead them into later difficulties. It is only necessary for us to read the lives of some of our great men to be convinced that many of these great men were extremely peculiar, but in some way they directed these peculiarities in a way which did not lead them into trouble with the social customs of their day. Another thing which I believe we cannot overlook is the fact that, as civilization has advanced, it has thrown increased restrictions around human nature, and these restrictions are always more or less repellent to nature's laws, so it might be well for us to consider just how far these restrictions should go. It is quite possible, that natural human instincts can be restricted to the degree where nothing but harm can result so far as society is concerned. Sometimes, it seems, that our restrictions have come faster than society in general has been able to understand and react to them intelligently.

While I am convinced that a great many of these individuals can be helped through some sort of early training, I am just as much convinced that there are many of them that will never be able to adjust themselves to the social customs of the present day, no matter how much early training is given them. A great many of them simply seem to be born with a lack of that quality of the human mind which enables them to absorb enough through training to compete properly with the

difficulties of living. The final outcome is always a life in our state institutions.

I cannot understand how anyone who is acquainted with the population of state institutions, and the records of these individuals, can help being convinced that mental disease runs in families. These records show case after case with a history of mental abnormalities in one, two and three generations, and it is my opinion that these instances would be still greater if we could always get the proper information concerning the family history. As the record stands, this evidence of mental abnormality in the families of these individuals runs approximately 50 per cent or 60 per cent. I do not know any other way to account for this condition of affairs except by heredity. But about heredity I shall have a little more to say when I take up the feebleminded. That it plays a large part in the functional psychoses I think there should be no doubt. If this is true it seems reasonable to me that the only way in which we will be able to prevent the psychoses which are the result of such a condition is by stopping the propagation of such individuals.

I believe that it is unnecessary at this time to say very much regarding the feebleminded group, as it is apparently quite well recognized by almost everyone that the problem of the feebleminded is one of the greatest problems with which we are confronted. There has been considerable written recently regarding this subject and the only thing I wish to do is to make a very brief comment.

This group, as is well known, is comprised of those individuals who are intellectually incapable of training to the extent that they become useful citizens. Their mental qualities, for one reason or another, are arrested at different levels of growth, always somewhere below normal. Because of this lack of growth they are incapable mentally of competing with life's difficulties. In this class of cases, as with the phychoses, it seems that the only relief that we may intelligently hope for must come through prevention.

This brings us again to the subject of heredity. It may be said here that the writer has no intention of going into the many theories regarding heredity, however, if we are willing to accept facts as observed in hospitals for our mentally abnormal, we must concede that a very large per cent of these cases are due directly to heredity. It seems to me that it would be impossible for anyone who has had experience in observing the records of these cases in our institutions to escape the conviction that at least 50 or 60 per cent are due directly to hereditary influences.

We realize of course that some of these conditions are brought about by injuries and diseases in very early childhood, or at birth. The prevention of these injuries and illnesses, of course, would aid in the elimination of just that percentage of the feebleminded. This fact is undoubtedly well recognized by the obstetrician and those engaged in general practice, and through them we may logically hope for methods which will lead to the prevention of such conditions. Therefore the thing that interests us most at the present time is the hereditary influence.

I believe that it is unnecessary for us to expect to have proof for all of our convictions by laboratory methods. With our present day knowledge a great many things which we believe concerning many human ailments cannot be proven by laboratory methods. In this connection I believe it is well to call attention to what might be considered the great human laboratory which is constituted by these institutional cases. Personally I cannot see why we hesitate to base a belief or a conviction upon sound observation of these cases over a long period of time. It seems that such a conviction would be just as sound as if it were supported by so-called laboratory facts.

We know that both the physical and mental characteristics come from the same germinal cell. I think that no one would doubt that physical characteristics, normal and abnormal, are transmitted directly through hereditary influences. If this is true, then, why should we hesitate to apply the same principle to the mental qualities? The problems resulting from the abnormal mind probably will never be capable of lending themselves to laboratory procedure, so it seems that we should be able to find some other method upon which to base our convictions, because the remedy for some of these conditions must be found. Aside from the literature in support of such a position I believe that we are fully justified in accepting this theory of heredity regarding this particular class of patients. The records of the state institutions will show, I believe, to any unprejudiced mind the direct influence of heredity in the majority of the cases which come to these hospitals.

It is unreasonable for me to believe that the offspring of two feebleminded individuals could possibly be normal. I cannot conceive of how this could take place. If I am correct, then, in these conclusions, a remedy is at once suggested for their elimination. It is to stop the propagation of such individuals. If this could be done thoroughly I have no doubt but that with in the course of a few generations we would see wonderful results. If we do not take some steps to prevent the increasing number of such a class of individuals the only thing that we can logically expect is a great financial burden in taking care of them. I have personally tried to look at this question from an unprejudiced viewpoint, and when I study the records and histories of these cases and observe them as we observe them in hospitals I cannot escape the conclusion that the only remedy which will be of any great benefit is prevention and I know of no other method of prevention than that outlined above.

In conclusion I wish again to say that if we expect to progress in the elimination of our mentally deficient individuals of all classes we must approach the question with unprejudiced minds and be willing to accept any solution which has for its basis sound observation. I seriously doubt if we shall ever be able to adjust these conditions to laboratory methods as these methods are understood today. As stated, mental conditions simply do not lend themselves sufficiently well to these laboratory experiments to enable us to get very much benefit in that way.

THE TOPICAL APPLICATION OF COCAIN IN THE NOSE.*

E. F. HOWARD, M. D.,
VICKSBURG, MISS.

Last spring, in reply to an inquiry regarding methods of using cocain in nasal surgery, I had a letter from Dr. Emil Mayer of New York, chairman of the A. M. A. committee on Toxic Effects of Local Anesthetics, that concluded as follows:

"Some day a cocain user will have a fatality, will be sued and if the lawyer knows his business, the defendant will be mulcted in damages that will teach some of the obstinate ones more than I and a dozen others can by directing their attention to the danger."

It is with the hope of doing something towards preventing this lawsuit from being staged in Mississippi that I am presenting this subject to you today.

The committee of which Dr. Mayer is chairman has laid down very definite rules for the use of local anesthetics. Cocain, no matter how weak the solution, nor how small the quantity, must never be injected into a patient. In the nose, by topical application, not more than 1½ grains may be used, and this in solution not to exceed 10

*Read before Mississippi State Medical Association, Jackson, Miss., May 10-12, 1927.

per cent. Since epinephrin increases the toxicity of cocain, not more than 1 mgr. of this drug may be added to cocain solution. This means that the operator relying on 10 per cent solution to produce anesthesia for his nasal surgery is limited to fifteen drops and, if he wishes to use the permissible mgr. of epinephrin, he simply dissolves his cocain in stock adrenalin. Most operators—and all patients—will be apt to find that, as ordinarily applied, this gives a very unsatisfactory anesthesia for anything but the slightest procedure.

Of course we understand, and I freely admit, that each one of us as a physician, has a right to his own opinion as to what does or does not constitute a dangerous dose or a dangerous method; but we must also admit that few, if any, of us have ever made any real investigation of the toxicity of cocain, or any other drug for that matter, and that the men who constitute the committee know a lot more about the subject than we do, probably more than any one of us will ever know, unless he happens to have a fatality. Their conclusions are based upon much investigation and honest endeavor, and may be taken as the most authoritative statement yet made on the subject. And it means that any man who exceeds the prescribed dosage and has an accident had better settle the case out of court, for not only have the committee's recommendations been officially approved by the A. M. A., but many of the leaders in our profession have publicly announced their acquiescence. You may remember that this was one of the reasons why Beck began to study synergistic analgesia.

Just to get a bird's eye view of our chances in Mississippi, I have endeavored to find out how much cocain, per operation, we are using. I have found one man who does not use cocain in nasal work. Of the other 25 who replied to my inquiries:

11 use weak solutions—less than 10 per cent.

10 use 10 per cent or stronger.

3 vary, sometimes strong solutions, sometimes weak.

1 uses paste consistently.

4 of these men use paste for nerve blocking in connection with weak solution.

Four add no epinephrin, the others use it in the stock adrenalin solutions, or a dilution, the amounts of solution varying from 2 minims to 1 or more drams.

Three measure the amount of cocain solution used. Others, when asked to estimate, guess at it, and the answers run to wide variations:

"Try not to exceed 2 or 3 grains."

"Most of 5 grains."

"About 7½ grains."

"10 grains on the average. Rarely over 12."

"Try to use not more than 3 drams of 20 per cent solution."

Now just fancy what would happen to one of these men defending a damage suit based on a cocain death. A friendly juror would be his only salvation.

There can be no question that we have been decidedly reckless in the use of cocain for nasal work. And it is so entirely unnecessary. Synergistic analgesia, novocain injections, and nerve blocking will do all that one needs, or if a man cares to rely on cocain, the preliminary use of adrenalin plus a high concentration of the cocain will bring him well within the margin of safety. Personally I prefer to use the condemned paste, but I have it from Dr. Mayer that the amounts I use are entirely safe. It is the quantity of cocain absorbed that constitutes the danger, and since I have been accurately estimating the amounts I use, now some two years, I find that I can do a simple septum resection with an average of approximately 65 mgr. and this in cases where no synergist is employed. By giving a preliminary dose of morphin this may be frequently reduced.

The trick of getting good anesthesia with small cocain dosage is, I believe, to be found in the preliminary application of epinephrin. As Dr. Dan McKenzie expressed it (Lancet, May 30, 1924):

"Let the surgeon paint the mucosa first of all with pure adrenalin solution alone and undiluted, in order to induce the local anemia that minimizes absorption, and, at the same time denudes and exposes the sensory nerve endings." If you will do this, whether you work with weak or strong concentrations, you will need less cocain.

For the past two years, for a simple septum resection, I have a measured 15 drops of adrenalin and a weighed 100 mgr. of cocain put on the tray and I never fail to send back part of the latter to be weighed out by the laboratory.

In other operative procedures the matter is not so simple. The anatomic conformation of the septum especially lends itself to topical cocainization, we get at it from both sides. Elsewhere other methods, or a synergist, are used. But whatever this may be, if the topical application is to be a part of the anesthesia, I find the preliminary shrinking is a great help.

DISCUSSION.

Dr. L. S. Gaudet (Natchez): Mr. Chairman and Gentlemen: Dr. Howard's paper has drawn quite a number of merited remarks from different journals. If I remember well I have seen his work commended and complimented in three journals. The problem of the amount of cocain to be used is an important one, and a paper such as his is timely, I think, because we have been working a great deal in the dark in so far as the application of cocain is concerned, and as he says, some bright morning we will wake up with a lawsuit on our hands if we do not know what we are doing.

Some four or five years ago I was in a hospital and saw some of the work done under local anesthesia, and the way they dumped out cocain on a piece of paper and put the wet swabs in it and put it to the nose, looked to me criminal, because I am sure they had thirty-five or forty grains of cocain—that amount of course is unnecessary.

Dr. Howard brings out a point which I am glad to say I have used in three cases of sub-mucus with good results, applying the adrenalin first and then applying cocain powder or paste or granules to the mucous membrane and keeping the cocain on one side of the swab. Certainly you use much less and a less dangerous amount. In my experience for many years in the use of cocain, I am glad to say I have only had the symptoms of cocain poisoning in one case, and we promptly stopped it. The patient was on the operating table, and we promptly administered an antidote. This case we were preparing to operate for a radical antrum. I had 30 drops of a 5 per cent solution of cocain measured out in a little glass. I took a little piece of cotton, dipped it into this cocain solution and stuck it under the lip, preparatory to injecting some novocain to complete the operation. That was done on the operating table when he arrived in the operating room. This case had been gone over physically, and was pronounced in good condition for an operation; in fact, his family physician sent him over for operative work. About ten minutes after the application of this cocain he began to groan, his pupils became dilated, he broke out in a cold sweat, and his skin became clammy and he had a little convulsion. He said: "I feel mighty bad." I said to the nurse: "Give him a little ether." We did that and his symptoms promptly went off. That was a little bit before I got Dr. Howard's correspondence and we caught it in time. Fortunately I had always been measuring my novocain or cocain for that same reason. Some day some lawyer might ask me how much cocain I used and I would not be able to tell him. I look at the table and the glass and the nurse and the cocain solution when it is put on the table. It is all measured out and I think it is a mighty wise thing to do. Dr. Howard's paper deserves a great deal of merit because he is bringing facts to us which we fortunately have not had to face, but some bright day we might, and so let us measure our cocain when we go home.

I may not agree with the committee on local anesthesia of the A. M. A., though they are very wise and brilliant men, but the older we get, and the longer we practice medicine, we work out ways and means of our own that prove more satisfactory in our hands than they do in the hands of others. You will not be able to get very good results with the quantity the committee permits. If you have a pretty straight septum, you might be able to get good anesthesia, but if you have a very crooked septum, with considerable amount of connective tissue, you might have to use something else, or you might have to use a little more cocain, which is justifiable from a legal standpoint because that is the patient's trouble and not yours.

In so far as tonsil work is concerned, we confine ourselves to the topical application of just a certain amount of cocain and no more, and we go along with our novocain injections and get good results. That brings up the question with many men as to whether the topical application of cocaine in tonsil work is good or not. We do not know, but that is a little bit irrelevant to this paper. The great thing that faces us is to take recognition of the fact that we ought to know the amount of this toxic poison we use, and if we use three grains it is not all absorbed, probably one grain, or one and a half, which goes into the circulation, so I consider from my own standpoint this one of the valuable papers before this section. I thank you.

Dr. E. Leroy Wilkins, Clarksdale: I enjoyed Dr. Howard's paper. I had read it before I came here, and about a year ago he sent out a questionnaire on this subject. I had been going along using as little cocain as I could in my work, as I was just a little bit afraid of it for one thing, and of course it was cheaper, but I had not paid any attention to just how much cocain I was using. I was using a relatively small amount, but when I got Dr. Howard's questionnaire, I began to think and think much more seriously than I had ever before about how much cocain I was using. I am frank to say I have cut down my over-head some more. I am using less and being more careful with it. In about three cases since I got Dr. Howard's communication last year, I have tried to use his method, but in each one of these I had a very severely angulated septum with scar tissue and I had to use more cocain, but it has been surprising to find how well I have gotten along with less cocain. I have, of course, not been getting a great deal of absorption because a part of it I have used in my swabs remains in the swabs. It is impossble to tell how much, but I used a whole lot more than the limit, and I want to thank Dr. Howard for putting the scare into me.

Dr. D. H. Anthony (Memphis): I appreciate this paper very much, and I rise to get some information from him. I would like to know his method of how he applies his cocain. I have always thought that in the application of cocain, if you want it in one spot in the nose, that you get a cocainization radiating about one-half inch from the topical application of the cocain, and I would like to know if this is right, and if the time permits and he could give us a little more on how he uses it, I would appreciate it.

Dr. E. H. Jones (Vicksburg): When I began this work one of the men that I learned a good deal from, started me off using 10 per cent cocain in 33 per cent adrenalin, and before I knew any better I have several times resected septums, using as much as two drams of that solution. After going into the practice, I preferred the cocain paste method but do not know how much I used, and do not yet. When Dr. Howard started out on this work, I, perhaps, saw a little bit more of it and I got just as scared as the rest of these gentlemen; I feel quite grateful to him about it, and since then I have conformed to his methods entirely; in fact, at the Vicksburg Infirmary, it is routine for the cocain to be weighed out in 100 milligram charts, and when you call for cocain that is what you get. Dr. Howard sends his back to be weighed. I usually just estimate the amount I use and I find I generally use around 65 milligrams. In two cases I tried to see how little I could use. These cases had a preliminary half grain of morphin—one was a charity case and one a private case—I was able to resect two septums on 25 milligrams of cocain each. I think that was rather noteworthy.

Dr. Howard left out one point in his modesty that I happen to know. He stated that it isn't how much cocain you use, but how much the patient absorbs: From a series of cases he had his swabs sent down to the laboratory and had them work out the percentage; he will be glad to tell you the percentage that was returned.

There is one thing I am mentioning, not to throw a monkey wrench into the works, but if anybody does get into trouble, this is a point that might be worked out. Dr. Howard says flatly that the A. M. A. Committee states that cocain in any solution whatever should never be injected, yet one of my friends visited at Mayos last year and he found them using 0.1 of 1 per cent by injection for removal of tonsils. We know we should not use so much cocain, but Ballenger says that 20 per cent cocain is always necessary, and at times it will be necessary to use pure crystals of cocain to get anesthesia. What are you going to do? Stay in the limits or get anesthesia? Dr. Shea uses a 2 per cent solution of novocain by injection. It works very nicely. I never have found in sinus work that it will remove all the pain, but the injection of novocain has another possible advantage, when you use cocain you have to wait for it to be absorbed, but when you use novocain you get it right now. I use the cocain paste, and when it does not give relief I use a 2 per cent of novocain by injection, and I keep account of how much I use.

Dr. H. L. Arnold (Meridian): This is a very fine paper that Dr. Howard has read, and I know you have changed up in the last few years on the use of cocain. I started out to use it freely. I used the paste. I do not use cocain in tonsil work at all. In septum work I find it is not

necessary to use a stronger solution than 10 per cent, but I also elevate the mucosa with one-half to 1 per cent novocain, so I do not rely on the cocain. I have never had any trouble in getting a deadening of the turbinates with 10 per cent solution of cocain, if you place it well up in there and leave it long enough, and by that I mean fifteen or twenty minutes. I find the secret of using small amounts of cocain is to use small swabs of cotton and place them right where you want them and leave them, and in that way I can get along with much less than I could a few years ago.

Dr. E. F. Howard (closing): When it comes to the question of using a local anesthetic and the question of time, there invariably occurs to my mind a remark I heard made once before a group of doctors who had just been discussing the question of local anesthetics in general surgery, and one pompous old individual got up and said, "Well, I have never bothered much about local anesthesia because it takes up so much of my time"; and he being one of the leading members of the local profession, a number of the doctors in discussing the paper brought out the same point, and the gentleman who had read the paper, in closing, said: "Regarding the question of time saved, I think that if you will find just how to handle the anesthetic, and know what you are doing, you will get along quicker than you will with general anesthesia; but even if you do not, the doctor who will sacrifice his patient or subject him to a greater danger simply to save a little time for himself, isn't fit to practice medicine."

When it comes then to the question of using a method, if that method takes a little bit more time than another method, I think we had better sacrifice the time for the good of the patient. Frequently we have to wait for absorption.

The question was brought up regarding the waste. When we use cocain in solution we put that swab wet with the solution up into the nose. If the nose be at all tight, or if we press the swab against the septum ever so lightly, some of that solution runs down on the floor of the nose, and if the patient is lying down, may go back into the pharynx, where it is both wasted and absorbed. In the old days, before I learned to use the paste, I frequently had patients spitting and complaining of the bitter taste. I do not use the crystals, I use the flakes. It gets in better by the use of the flakes. I can control the application of the cocain to the area I am going to operate on, and it does not go spreading all over the face of the earth to be absorbed somewhere else and to waste, which I try to avoid because I have gotten to the stage where I count my milligrams of cocain as if they were so much radium, because I want to know the exact quantity. I have my cocain in flakes, get a little adrenalin on the swab, squeeze the swab nearly dry between the thumb and finger, and then apply one side of it to the cocain, very lightly; frequently when I put the cocain in the nose there will be a flake of it blown off by the breath of the patient. It is practically pure cocain and there is enough moisture already on the septum to hold it. I really believe if you could put it up there entirely dry and paste it on, it would be the best way, for it would stick even if the nose had been partly dried out by your preliminary adrenalin. Sometimes one application of cocain flakes is all that is necessary to do a septum resection. Take the swab, slip it up with the side of the swab carrying the cocain next to the septum, wipe it on, turn it over and go up the other side. I put on the adrenalin and then I just chat with the patient; here is where I am apparently wasting time; in fact, when I am operating on a septum I am frequently keeping up a string of conversation, keeping the patient's mind off it. I talk to that patient after the application of the adrenalin—may stroll around the room, but I am not wasting any time. I am simply giving time for this to act, and then, after two or three minutes, I go ahead with the cocain.

When it came to the question of how much cocain the patient got, by running alternate cases, one with 10 per cent solution and the next with the paste, we found there was very little difference in the amount of cocain actually left on the swab by either method, and that it would vary between 10 and 15 per cent; so if you use 100 milligrams in doing an operation you can say that the patient got 85 or 90; that represents the waste, the amount remaining in the swabs. I do not know the method that the laboratory man used in extracting this cocain from the swabs. I do know he had an awfully hard time doing it, and that it was several weeks before he got a method to suit him, and even then I think it took something like twenty-four hours to get it all out. I remember with some amusement that he wrote to several chemists of some reputation, asking how to get it out, and one man, who was at the head of the laboratory of a pharmaceutical house of some reputation, wrote him he did not think it was worth while to fool with it, that he would find it more expensive than to go ahead and buy more.

The question of cocain idisyncrasy is an interesting feature in connection with this. I had one right lively cocain knock-out in a patient on whom we used something like 50 milligrams and when the laboratory man went up to the chart room to make a note on the chart of the amount

of cocain I had used, and he saw the rest of the history, he said: "My God, what would have happened if you had gone ahead and used it like we used to in the old times?"

When I say cocain under any circumstances must not be injected, that is a quotation from the committee of the A. M. A. Whether we agree with the committee or not, if it comes to a lawsuit and the lawyer on the other side gets hold of the fact that we have injected cocain, and lawyers are pretty wise these days, he will say: "Doctor, you injected cocain and you know, don't you, that the committee of the A. M. A. says you must not inject cocain?" "Yes, I know." What are you going to do? I am putting this up simply as a question of safety.

Dr. B. S. Guyton: Has that been recognized as the action of the committee? Has it been published in the Journals?

Dr. E. F. Howard: Yes; spread all over the face of the earth.

Dr. B. S. Guyton: How do you apply that cocain when you are going to do a sphenoid?

Dr. E. F. Howard: That is another question—I am referring to topical applications only.

COMPARATIVE RESULTS OF THE CAUTERY VERSUS THE STURMDORF OPERATIONS IN CERTAIN LESIONS OF THE CERVIX.*

D. I. HIRSCH, M. D.,

MONROE, LA.

The question of results obtained by the use of the cautery and the operation of Sturmdorf resolves itself into the consideration of chronic endocervicitis.

It is not my intention to go into details regarding the etiology and pathology, I will speak in generalities, only touching the high spots and pass on to the question before us: Which is the better procedure in the treatment of these chronic cervices?

Chronic endocervicitis is a low grade infection of the cervical mucosa. This inflammatory process may be confined to the mucosa of the cervical canal or may extend to the deeper tissues causing a cervicitis. Uterine and cervical mucosa differ greatly in their structure, the uterine mucosa being fairly immune to these chronic infections.

*Read before Louisiana State Medical Society, New Orleans, April 26-28, 1927.

Etiology—The predisposing cause is usually a laceration, which becomes infected, the infection spreading until it involves the entire cervical mucosa. Gonococci, staphylococci, streptococci and colon bacilli are all causative factors; also the lowered resistance caused by diphtheria and scarlet fever in children. No doubt many of these infections originate in childhood.

A most recent paper by Dr. C. Jeff Miller in the November 20th, 1926, number of the Journal of the American Medical Association gives in detail the etiology, symptomatology and secondary pelvic manifestations of chronic endocervicitis, and from his paper I will take literally the pathology and symptomatology and incorporate it into this paper.

The gross picture of endocervicitis may differ in intensity, but is for the most part typical. The cervical mucosa appears red, swollen and more or less everted, and there are circumscribed areas of glandular proliferation about the external os. The columnar epithelium of the canal may have pushed itself out on the vaginal aspect of the cervix and it may have overgrown or completely replaced the stratified epithelium normally present, producing the so-called erosion, which, as has been repeatedly pointed out, is in no sense an ulceration, but merely new cell formation resulting from the proliferation of the lymphoid tissue within the canal. Hypersecretion of the cervical glands, which results both from the prolonged vaginal contact and from the distorted structure, results in turn in hyperplasia of the cervical connective tissue. The occluded glands, which may be actually plugged by tenacious mucus as well as by the overgrowth of squamous epithelium, or by hyperplasia of the periglandular tissue, and the cyst formation, which is not infrequent, added to the hypertrophy, so that the cervix may be several times its normal size. The microscopic picture, which concerns us as clinicians only incidentally, will vary from mild inflammatory changes in the stroma and excess of glandular tissue to marked cystic

changes and even to multiple abscess formation.

SYMPTOMATOLOGY.

The symptomatology of the disease is varied and is often complicated by the fact that, when the patient reaches us, we are dealing not only with endocervicitis, but also with associated or resulting pathologic change that may entirely overshadow the original lesion. The most constant symptom is a leukorrheal discharge, usually odorless, varying in quantity and varying also from a thin, mucoid secretion to a highly colored, purulent one, as is nearly always the case in gonorrhea, but always characterized by its tenacity. Menstrual derangements are not uncommon, being the result of a secondary hyperplasia, a circulatory stasis, or a secondary ovarian involvement. Backache and dyspareunia are not ordinarily present unless there are associated displacements or parametrial involvement, particularly posterior cellulitis, with extension to the uterosacral ligaments. Sterility is a frequent complication, owing to the plugging of the cervical canal by tenacious mucus or the thickened cervical mucosa, or the destruction of the spermatozoa by purulent secretions. Constipation is frequent and systemic manifestations will vary according to the severity of the disease.

Since the leukorrheal discharge and the gross cervical picture are in most instances pathognomonic, diagnosis does not ordinarily present many difficulties. Tuberculosis and syphilis of the cervix, both comparatively rare conditions, may be differentiated by the history and the general physical and laboratory examinations, as well as by the fact that normally in both the tendency is toward destruction of tissue rather than proliferation. Smears should always be made, and cultures if necessary, in an endeavor to identify the infecting bacteria, and in suspected malignant diseases laboratory studies are essential for a differential diagnosis, which is imperative in view of the radically different treatment necessary in each instance. It goes without saying that infections of the lower genital tract, and of the upper pelvis, should be carefully differentiated also.

THE CERVIX AS A SOURCE OF FOCAL INFECTION.

There has been considerable work done to establish the cervix as a focus of infection. Much work has been done by Laura Monech, Sturmdorf, Langstrath and Rosenow. My personal experiences have been very interesting and would tend to show that an infected cervix can become a focus of infection. This is borne out by the very interesting fact that seven of these cases treated with the cautery developed general malaise and vague pains which lasted from four days to six weeks. In two of these cases temperature as high as 102 was observed. There is no doubt that the temperature, malaise and pains developed from absorption from the infected points of cauterization. In two other cases these patients were entirely relieved of aches and pains, which were not relieved by removal of the teeth and tonsils.

TREATMENT.

We will only consider the linear cauterization as advocated by Hunner and Russell, and the operation of Sturmdorf. The technique of these procedures will be demonstrated by lantern slides. The ideal cases for the cautery are those in women with a slight cervical involvement without much eversion of the cervical mucosa. In those cases in which there is a profuse mucus discharge without eversion, in women that are sterile and want children, the cautery should be given a very thorough trial. I have treated 31 cases with the cautery, 23 of which were known to have had gonorrhea, 12 have been observed recently and are well, 8 have been too recent to form any conclusions. Of the remaining 11, 3 I have not been able to see, and in 8 it was

found necessary to do a Sturmdorf. To recapitulate:

Cured	12
Operated	8
Recent	8
Unknown	3
	31

Of the 8 cases operated, 1 was a young married woman never pregnant,. with a profuse mucus discharge which necessitated wearing a protector; negative for gonococci. Cauterization was resorted to twice at intervals of six months, with no results. The others were in cases which were badly selected for the cautery and needed operation as the treatment of election.

I cannot pass from this subject without mentioning that from four to six months is as early as results can be expected following cauterization, and that immediately following cauterization the discharge is more profuse. Patients should be informed of these facts so that they will not become discouraged. The objection to the treatment by the cautery is the fact that it is nearly impossible to destroy all the infected mucosa. Sometimes it is necessary to repeat the cauterization. In my cases there were eight failures or 30 per cent. In 17 cases, in which the Sturmdorf operation was performed, all have been cured except one, in which too little cervical tissue was removed. All of these cases have been relieved of leukorrhea, backache, and concomitant symptoms. Two have had normal deliveries following the operation, and are still free from any infection.

CONCLUSIONS.

The cautery has its place in the treatment of endocervicitis, but it is limited to those cases in which only part of the cervix is involved. It should not be used in cervices that have been lacerated, those that have a typical rosette appearance. It can be tried upon any case with the understanding that should it fail a cure can be assured by following the technique of Sturmdorf. The cure of an infected cervix will, in a great many cases, result in a cure of the pelvic inflammations which are so commonly seen accompanying chronic endocervicitis.

DISCUSSION.

Dr. P. Graffagnino (New Orleans): The subject chosen by Dr. Hirsch for his paper is certainly an important, widely discussed, and an intensely interesting one from a gynecological viewpoint.

I have always been an ardent advocate of cauterization in the treatment of endocervicitis and know of no procedure that gives a better result or more lasting satisfaction. In reviewing the reasons why we have been impressed with cauterization, we find they are many. First, you get rid of infection. If you consider the peculiar anatomy of the cervix with its gland bearing epithelial lining so susceptible to infection and which is the seat of latent gonorrheal infection, the reason is at once apparent. Any topical application, such as the medicated tampon of silver nitrate or mercurochrome is worthless.

I believe that cauterization, to be effective, should always be done in an institution under general anesthesia, as the necessary exposure of the cervix can be accomplished in no other way. The cervix should be thoroughly treated with a limited number of linear cauterizations, leaving small bridges of tissue between the cauterizations to permit of subsequent epithelization. In many of our infected cases, we split the cervix anteriorly and posteriorly so as to reach and entirely remove all the infection bearing lining and prevent recurrence due to reinfection of the glands above.

Now, what to expect from the cauterization? In lacerations of the cervix the injured cervical mucosa, constantly exposed to the acid vaginal secretions, becomes infected wth resulting congestion and eversion, which, in turn, produce hypersecretion. This profuse leukorrheal discharge, with its attendant discomfort and the necessity of changing clothes, is one of the most distressing conditions for which the patient seeks relief. Following cauterization there is retraction of the cervical mucosa, the eversion is corrected and the discharge cured.

There are two things to remember, the first, that it is impossible to get a hemorrhage from cauterization. We sometimes have cases of severe hemorrhage subsequent to cauterization when the sloughing occurs, but the simple application of a tampon and pack will control the bleeding. The second, is the possibility of blocking your cervical canal by retraction of tissue when cicatrization takes place. Have your patients return so as to avoid this possibility.

We use the cautery in all cases of cervical infection in the child-bearing period and have practically given up the knife in this type of case, limiting the Sturmdorf amputation to women past child-bearing. But where the radical procedure is definitely indicated we do a high amputation so as to eliminate the possibility of carcinoma.

Dr. David I. Hirsch (closing): I want to thank Dr. Graffagnino for his very liberal discussion, the points that he brought out and the reasons why we affect a cure with the cautery are well given. But I do think that the operation of Sturmdorf has its place in the treatment of some of these cervical infections, if they be selected. Other treatments, radium, etc., I did not mention.

When you consider the fact that the majority of women seeking relief from the gynecologist have cervical infections, when they reach you if you will employ these simple procedures and then keep them under observation a sufficient length of time to know they are cured, that time will be well spent and you will have accomplshed a great deal of good.

THE CONTROL OR CURE OF PERNICIOUS ANEMIA BY THE MINOT-MURPHY LIVER DIET.*

SEALE HARRIS, M. D.,

BIRMINGHAM, ALA.

Minot and Murphy's astounding results in the treatment of pernicious anemia with the liver diet and the confirmation of their work by a number of clinicians, make it appear almost certain that the clinical cure of one of the most fatal maladies known to man has been discovered. When we remember that every text-book on medicine in existence, unless some have been published or revised in the last few months, classified pernicious anemia as a hopelessly incurable disease, its conquest by so simple a method of treatment is one of the most remarkable achievements of this or any other age.

Minot and Murphy have not asserted that the liver diet will cure pernicious anemia. They only publish the fact that the blood of 90 patients with the disease, when given a liver diet, had increased from an average of 1,480,000 red blood cells per cubic centimeter of blood to more than 4,000,000 in one month; and that the symptomatic improvement in all cases, except those with demonstrable cord changes, was equally marked. In 45 of Minot and Murphy's cases the blood count had been practically normal from 1 to 3 years and these patients had remained free from symptoms referable to pernicious anemia so long as they continued the liver diet. It would seem that if pernicious anemia cases have been clinically well for 3 years, and that if no patient who kept up the liver diet had a return of symptoms, the disease may be classed as among those for which a specific remedy is available. To say the least of it, the assertion can be made without fear of contradiction, that pernicious anemia can be controlled and the patient remain free from symptoms so long as he will eat liver, just as diabetes treated with insulin combined with the proper diet, need not shorten the diabetic's life or interfere in any way with his efficiency or happiness.

The liver diet does not remove the cause of pernicious anemia, whatever that may be, and it therefore cannot be called a complete cure. Nevertheless, as in scurvy, the patient can be cured of that disease by eating fresh fruits and vegetables, but when he leaves off food containing vitamin C the scurvy returns; so can the pernicious anemia patient be restored to health and continue normal in every way on a liver diet. Considering all the established facts regarding the results in treating pernicious anemia by the Minot-Murphy method, one cannot be regarded as over enthusiastic in stating that the pernicious anemia patient may be promised restoration to health if he will eat a sufficient quantity of mammalian liver.

RESULT IN FOUR CASES.

Among the most dramatic and the most thrilling results that I have witnessed in thirty-three years of practice have been the restoration to health of four patients with pernicious anemia for whom we had no hope a year ago. We had exhausted

*Read by invitation before the Mississippi State Medical Association, May 10, 1927.

every method of treatment known to us that offered hope of relief with only temporary remissions in symptoms. These four patients had rested in bed for months. They had been on a high protein, rich vitamin diet, including liberal quantities of red meats, milk, cream, vegetables and fruits; they had been taking dilute hydrochloric acid one of them for eleven years —six years before he developed pernicious anemia; they had had arsenic in various forms, orally and intravenously; they had been given many transfusions, one of them twenty-one times with only temporary benefit; irradiation with the quartz-mercury light had not improved two of them; and it seemed that they were doomed to long drawn out ill health, and death in from a few months to a year or two. When we learned, in May, 1926, of Minot and Murphy's work these four patients were given about 250 grams of liver a day, and in from one to two months their red blood counts went up from an average of 1,500,000 to 4 500,000, their symptoms disappeared and they have been clinically well since, though all of them except one has continued to eat liver regularly.

One of these four patients, a farmer, has been splitting rails, cutting crossties and working as a laborer on a farm for six months though he has not been able to get liver most of the time. His red blood count on May 9, 1927, was 4,450,000 and he said he felt as well as he ever did in his life, though he had not regained completely his former endurance.

It has occurred to us that the results obtained in this case are analogous to that following the use of insulin in certain diabetics who have discontinued the insulin and are able to metabolize a sufficient amount of glucose forming foods to maintain their normal weight and attend to their regular work. In the diabetics this improvement in carbohydrate metabolism is accounted for by the fact that after periods of rest to the islet cells of the pancreas they are able to secrete enough insulin for the patient's normal needs. Might it not be that in this case of pernicious anemia the use of liver has given rest to the liver cells concerned in stabilizing red blood destruction and that the liver diet may be discontinued without a return of the anemia? However, we advised this patient to return to the liver diet, because we are unwilling to experiment with the bread winner of a family.

While one of these patient's blood count on May 10 was 4,860,000 and she had no symptoms referable to pernicious anemia, since taking the liver she has had a return of bronchial asthma from which she had been free for 13 years before taking the liver diet. She prefers to eat liver and suffer from asthma rather than leave it off and run the risk of a return of pernicious anemia. It is possible that this may be a case of food allergy in which the patient is sensitized to liver protein.

THE LIVER DIET.

The liver diet in pernicious anemia is simple, since it merely consists of adding 180 to 240 grams (6 to 8 ounces) of liver to an otherwise well balanced daily menu. Calf's liver is usually given, though beef, hog, sheep or other mammalian liver may be used. Western guides believe that deer and bear's livers have health giving properties, and there is a popular impression that chicken livers are good for the complexion. The East Indians regard goat's liver both as a delicacy and as a remedy in malnutrition and Eskimos eat the livers of fish and various polar land animals. It is entirely possible that the basis for these homely observations was the improvement following their use by anemic individuals. It seems probable that liver from any source may be efficacious in the treatment of pernicious anemia, provided a sufficient amount is eaten.

The liver may be prepared in any way to suit the taste of the individual. Most of our patients prefer it fried, though we caution them not to use too much grease and not to cook liver too long. It may be broiled or made into a stew, and onions

or peppers may be added to vary the flavor. Some believe that the liver is more potent when given raw, but our clinical results with cooked liver lead us to believe that heat does not destroy the substance that controls red blood cell destruction. In patients who do not like liver and cannot or will not eat it cooked, Bierring's method of administering liver may be tried. He has the fibrous part removed and the liver substance finely ground giving one-third an ice tea glass of liver pulp to two-thirds of orange juice. This mixture is said to have an agreeable taste and is given between meals. Since many patients do not like the idea of eating raw liver and it is disagreeable for them to make this mixture for themselves, someone else should prepare it and serve it to them.

Pernicious anemia patients frequently have capricious appetites and it is best for such patients to begin with small quantities of liver added to a light diet of fruits and vegetables. After four or five days they are usually able to take a full diet including liver two or three times a day. Other patients will take the full amount of liver from the beginning of treatment.

Minot and Murphy give lean meat (beef or mutton) 120 to 240 grams in addition to the liver. We believe that this makes a too high protein diet, and that 240 grams of liver, which will yield about 60 grams of complete protein and which added to the casein in two or three glasses of milk is enough animal protein for the daily nutritional needs of an average individual. Add to this the protein in bread and vegetables, the pernicious anemia patient, taking 240 grams of liver a day, is getting a high protein diet without using any other form of meat.

Minot and Murphy formerly restricted the fats to 40 grams a day, but they since have decided that more fats may be used. There seems no reason why 75 or 100 grams of fat a day should not be used with an underweight pernicious anemia patient.

A high carbohydrate diet is the great nutritional sin of the American people; and on general principles we prefer giving the minimum amount of bread, potatoes, sugar, and other glucose forming foods.

The following is the diet we give to our pernicious anemia patients. The quantities are reduced for the first week but after that the full amounts are used and the diet varied as much as possible except in the use of liver.

DIET LIST.

BREAKFAST

One Fruit: ½ grapefruit, orange, ½ canteloupe, baked apple, prunes, grapes, berries, peaches, or any other fruit in season.

One Cereal: Small portion of thoroughly cooked oatmeal, corn or wheat breakfast food, or 1 shredded wheat biscut, with milk or cream, no sugar.

Fried calf's liver (3" x 3" x ½", 90 grams or 3 ounces) and two thin slices breakfast bacon.

Bread: 1 slice whole wheat bread toast; or 1 small graham flour biscuit, 1 pat of butter, 1 tablespoon honey.

Milk: 1 glass sweet milk.

DINNER

Soup: Chicken, celery, vegetable, barley or puree of peas or beans.

Large portion liver stew, with peppers, or liver hash, containing 90 grams or 3 ounces liver (weighed before cooking).

One Protein Vegetable; i. e., baked beans, butterbeans, lima beans, field peas or English peas.

Green Vegetables: (one or two varieties) Large serving of spinach, turnip greens, mustard greens, tender string beans, cabbage, squash, egg plant, okra, corn, carrots, cauliflower, brussel sprouts, onions, etc., cooked without much grease.

Bread; 1 slice whole wheat bread or dry toast or small piece of country ground corn meal bread, or 1 small corn muffin, 1 pot butter.

Dessert: Peaches, baked apple, banana, or other fruit or berries with cream—no sugar. One small piece of watermelon, or fruit dessert. Ice cream or sherbet once or twice a week.

SUPPER

Broiled liver with onions (3" x 3" x ½", 90 grams or 3 ounces).

One Uncooked Vegetable: Large serving of lettuce, cold slaw, tomato, grapefruit, or Waldorf salad. (Mayonnaise or French dressing). Celery or radishes.

Bread: 1 slice whole wheat bread or dry toast, 1 or 2 pats butter.

Milk: One glass sweet milk or buttermilk.

Dessert: Orange, canteloupe, baked apple or banana and cream without sugar. Fresh pineapple or other fresh fruit desserts without sugar.

Note: The liver may be cooked to suit the patient's wishes. Very little salt should be used on food—not more than ¼ teaspoonful a day in addition to the minimum amount needed to flavor cooked foods.

GENERAL MANAGEMENT.

It is not strictly necessary to weigh and measure the food for the pernicious anemia patient, though it is desirable for it to be done for two or three weeks until he can be taught the amounts of liver and other foods he needs at each meal. It is unquestionably best for the pernicious anemia patient to rest in bed for three or four weeks until his red blood count has returned to nearly normal. We therefore agree with Minot and Murphy that it is best for such cases to be hospitalized for the first three or four weeks of treatment. Finally, every organ in the body of the pernicious anemia patient should be thoroughly studied, because it often is a part of a process affecting various tissues. Particular attention should be given neurological symptoms indicative of cord lesions. If cord changes have occurred the patient should not be promised relief from his neurological symptoms by the liver diet. Experience has shown that improvement in cord symptoms does not occur in pernicious anemia patients even though the blood count has returned to normal and the patient's general condition excellent after a few weeks on liver diet.

A PREVIOUS HEPATITIS PROBABLY THE ESSENTIAL ETIOLOGICAL FACTOR IN PERNICIOUS ANEMIA.

The results in the use of the liver diet in the treatment of pernicious anemia seem to place it among the increasing number of nutritional diseases. McCollum thinks that it may be a vitamin deficiency disease, while Peabody suggests that it may be due to hypofunction of the bone marrow and other blood forming organs and makes the analogy to hypothyroidism. The control of pernicious anemia by the addition of liver to the patient's diet resembles very closely the control of diabetes, or hypoinsulinism, by the use of insulin. In diabetes the most frequent cause of the hyposecretion of insulin is a previous pancreatitis which has destroyed the islet cells of the pancreas, so might not a hepatitis destroy a large proportion of the particular cells of the liver which stabilize red blood cell destruction and which also maintain hemoglobin equilibrium? In other words, pernicious anemia seems to be essentially a disease of the liver, though the spleen which has been called "the cemetery of the red blood cells" may also be involved in its pathogenesis.

The theory that pernicious anemia may follow, or be a sequel of, a hepatitis seems borne out by the fact that autopsies on pernicious anemia patients have shown hyaline and other degenerative changes in the liver. It may not be possible always to demonstrate the destruction or degeneration of liver cells in pernicious anemia any more than pathological changes can always be found in the islet cells of the pancreas in autopsies on diabetics; yet in the latter case, we know that dysfunction of the islands of Langerhans is the cause of diabetes. Allen was unable to find evidence of islet changes in animals recovered from a pancreatitis which he had produced experimentally, yet they showed a lowered carbohydrate tolerance. Might not a hepatitis destroy or disturb the function of the liver cells concerned in controlling red blood cell destruction without leaving any demonstrable lesions?

NOMENCLATURE OF DYSFUNCTIONS OF THE LIVER ENDOCRIN CONTROLLING ERYTHROCYTOLYSIS.

With our present knowledge regarding the liver endocrin which controls red blood cell destruction, the nomenclature of its dysfunction is difficult; but the substance

formed in the liver which controls the hemolytic function of the reticulo-endothelial cells might be called hepatarin until something definite is known of what the substance is or of which hepatic cells produce it. If there exists a deficiency of this substance, a condition which for the want of a better word might be called hypohepatarinism, the secretion of the hemolysin by the reticulo-endothelial cells would be uncontrolled and pernicious anemia would result. Feeding liver, or the administration of a liver extract containing the substance would supply the needed endocrin for controlling hemolysis, thus attaining the desired stabilization of the number of red blood cells in the circulation.

An excessive secretion of this substance, hyper-hepatarinism, would inhibit red blood destruction, thus producing polycythemia. If this hypothesis is correct the excessive ingestion of liver would produce polycythemia. In one of our patients the blood count went from 1,200,000 to 5,000,000 when he was advised to reduce the amount of liver which he had been eating, whereupon his red blood count went down to 4,500,000. He resumed the liver and in a week his count went up to 5,100,000, and in three weeks, June 9, 1927, his red blood count had gone up to 5,210,000. We believe that if he continues to eat large quantities of liver he will develop polycythemia.

It is said that in Strassburg, Germany, where liver sausage and pate-de-fois-gras make up an important part of the diet of its inhabitants, pernicious anemia is unknown, while polycythemia is of frequent occurrence. Since polycythemia occurs in persons who have not eaten an excess of liver it would seem to be due to a dysfunction of the liver, a hypersecretion of the substance controlling red blood cell destruction.

We have been able to demonstrate that in certain persons there was an excessive production of insulin, which we called hyperinsulinism. They had hypoglycemic reactions similar to those following the administration of an excessive dose of insulin in diabetics, their blood sugar readings having been below 70 milligrams per 100 cubic centimeters of blood. If there is both an excessive production of insulin by the pancreas (hyperinsulinism) and a deficiency of the secretion of insulin (hypoinsulinism or diabetes) it would seem probable that the liver may secrete an excess or a deficiency of the substance that controls erythrocytolysis.

DISCUSSION.

Dr. W. A. Dearman (Gulfport): Dr. Harris' paper is very illuminating, especially since we take into consideration the seriousness of pernicious anemia. We have to admit it is rather a rare situation coming up in the practice of any individual physician; it is, however, prevalent enough and distributed over wide enough areas to have importance attached to it. It is not worth while to go into the diagnosis of primary anemia or its differentiation from secondary anemia, because close inquiry into the history and the blood findings will usually set you right. The spleen is not always enlarged, though quite frequently it is. It can not usually be palpated in dorsal decubitus but can usually readily be palpated in the standing position or in right dorsal decubitus. I have been practicing for twenty-nine years and have in my files now the records of seven or eight cases of outspoken pernicious anemia. I have seen red counts ranging from 900,000 down, with the color index high (which is diagnostic of pernicious anemia) and every evidence of a blood storm, all kinds of torsion and twisting of the red blood cells, some large, some small, some round, some irregular, some spindle-shaped, poikilocytosis, anisocytosis, and everything that goes with it, especially fatigue, exhaustion on the slightest exertion, irritability, and after cord changes come on, numbness from the knees down.

Dr. Harris has had patients on the Minot-Murphy liver diet only since last June, I believe; and it may be from a statistical point of view we have to be on our guard. It may be that a pernicious anemia case will come to you just on the high tide of remission. I had that happen to me a year ago. The man had every evidence of pernicious anemia and on top of that had acute parenchymatous nephritis, the urine loaded with albumen and casts, and a high non-protein nitrogen. I forecasted a fatal result and sent him back home with a very unfavorable prognosis. I warned him that he might get better. He went

back home, changed doctors several times, and got much better. The next I heard of him, was the terrible mistake I had made, that I made a wrong diagnosis in the first place and gave a bad prognosis, etc. The man now is in a hospital, I understand, and very ill.

Dr. G. W. F. Rembert (Jackson): It is always a pleasure to hear Doctor Harris and to have him with us and his endorsement of any plan of treatment at once insures its merit.

The present status of the treatment of pernicious anemia is well described by Evans in his recent monograph on that disease, namely: "The treatment of pernicious anemia is discouraging. No patient with true pernicious anemia has ever been cured. However successful any therapeutic procedure may have been at first, there comes a time when the patient does not react to any treatment, he gradually grows worse, and death ensues."

It might well be said that the Minot-Murphy diet, as outlined, has been one of the greatest contributions offered in the treatment of pernicious anemia, and it has also served to bring about a better understanding of the possible underlying causation of this disease than has existed before.

Richards has reported his results (which have been favorable) with a diet similar to that of the Minot-Murphy but with a larger fat-intake and of a higher caloric value. However, it can be safely said that the Minot-Murphy plan offers more than anything heretofore known.

Doctor Harris' results in the cases presented have certainly been very gratifying and I feel that he is to be congratulated thereon.

Dr. Otis S. Warr (Memphis, Tenn.): Just another word of testimony in favor of this diet. At the meeting in Dallas last year of the American Medical Association, in the discussion of pernicious anemia by Dr. Barker of Baltimore, Dr. H. A. Christian referred to the work in pernicious anemia then in progress under Drs. Minot and Murphy. It happened that we had a patient with pernicious anemia, who had had a number of transfusions without much benefit. As soon as we returned home that patient was started at once on this diet, a period now of thirteen months. He improved more rapidly on the diet in thirty days than after several transfusions. We have had several other cases that responded equally well. Nevertheless, I think it is rather early to speak of this treatment in terms of a *cure*. It is well to remember that as yet no one has offered a satisfactory explanation for this disease. Various treatments have from time to time been suggested. In 1914 I was in Eppinger's Clinic and saw him present a patient at that time, on whom a splenectomy had been done. This patient, following the splenectomy, had gone five years without a remission. He pointed to that patient with a great deal of pride and felt that splenectomy was the cure for pernicious anemia. You recall that splenectomy fell into disrepute, and I think no one now would suggest that as a treatment for pernicious anemia. Another treatment which has also fallen into disrepute, due to the great risk, was the surgical drainage of the ileum, first suggested by Syderhelm.

As Dr. Harris pointed out, we have in this treatment at least a method that offers no danger and there is no harm in trying it. The greatest difficulty we have found is in getting these patients to take the liver, in what we feel, would be adequate quantities, and we have only had one patient as yet who has been willing to keep up the use of *raw* liver over any length of time. I would like to ask Dr. Harris to tell us just how he prescribes the liver—what preparations, and, if he prescribes raw liver, just how he is able to get his patients to take it.

Dr. Seale Harris (closing): I think it is more than a coincidence that in Minot and Murphy's 45 cases every one of them showed marked improvement, increasing from 1,400,000 red blood cells to an average of more than 4,000,000. The fact that results are uniform, in reports from all over the country by a number of different men, seems to indicate that we really have found a method of controlling and, I am inclined to believe, of curing pernicious anemia.

As to the question of cooking the liver and the kind of liver and its preparation, we use calf's liver. It may be fried, with onions or peppers, insisting on not using much grease. Minot uses a very low fat diet, and we have been using a moderately low fat diet. We start with small quantities of the liver first, usually fried or broiled, not cooked too hard—lightly cooked. Cooking does not seem to destroy the substance in the liver that brings about the improvement. It may be used as liver stew or liver ground up in something like thickened soup. One patient, a farm laborer, has left off liver a good deal of the time because he lives away out in the country where there is no market and he can not get liver. The people in his neighborhood, however, are giving him chicken livers and chicken gizzards, and he is eating a good deal of that sort of thing. In China fish liver is used in curing xerophthalmia. That is probably, however, due to absence of vitamin A. As I say, it does not make much difference; any form of liver is useful. Start with small quantities, 20 to 30 grams, and

increase up to 50 or 76 grams two or three times a day, cooked in any way it seems to give results.

Dr. Joseph C. Bloodgood (Baltimore, Md.): Dr. Minot and Dr. Murphy have just made their report at Atlantic City, and their experience from their last report confirms everything Dr. Harris has said.

One other thing: if you take the liver and cut out the fibrous part and chop it up very fine and mix it with orange juice or with coffee, they can take it in that way. I have had a very large experience with it, because I see so much anemia in malignant disease. I give all my patients with anemia this treatment, because it saves blood transfusion and because it makes them much more comfortable and is much cheaper than blood transfusion. I understand that liver is the essential gland and should be used, if possible, every day; then kidney, then pancreas, then calf's brain. We may come to the point of having to ask well people in the community not to buy liver. Then we must have publicity. I have just returned from a great cancer campaign in Illinois. Every day an article appeared on the first page of the daily papers there. I had written forty-two articles on cancer, and we exhausted all our articles. I got tired of talking on cancer and talked on public health. When I got back to the university there were turned over to me one hundred letters (of course I had given no address) from people who said they had pernicious anemia and were under the care of doctors and were trying this diet. If I should have a case of pernicious anemia reported to me, I should telegraph that man to go on the liver diet at once; I think it would be a very Christian thing to do.

THE WASHINGTON MEETING OF THE MEDICAL LIBRARY ASSOCIATION.*

By MARY LOUISE MARSHALL,

Assistant in Charge Library of the Orleans Parish Medical Society.

Someone has remarked that specialism to a high degree in any given field must of necessity lead to a relative professional loneliness. And so it is in the field of medical libraries. There are perhaps fifteen thousand persons engaged in library work in the United States. Of this number not more than three hundred, or 2½ per cent are connected with the specialized field of medical library activities. About half of this number is represented in the institutional and personal membership of the Medical Library Association. Thus, considering this very limited field, a gathering of over sixty persons to discuss technical problems current in medical libraries is of inestimable value in the opportunity it affords for the interchange of ideas.

The sessions of the Thirtieth Annual meeting of the Medical Library Association were held in the Army Medical Library, Washington, D. C.,—that mecca of medical research in this country. The reception and registration of members on the opening morning showed representation from Denver to Boston, from Montreal to New Orleans and Galveston. The exhibition cases in the library rooms were filled with rare books drawn from the wonderful collection of incunabula. Lt. Col. James M. Phalen, librarian of the Army Medical Library, opened the meeting, welcoming the association to Washington and outlined in brief the work of the library. The collection now contains over 830,000 volumes and pamphlets, 7000 portraits of physicians, 740 medical engravings and prints, 443 medical caricatures and 495 incunabula. Exclusive of the transactions of societies, the library subscribes for 1925 periodicals of medicine and its closely allied subjects. Of particular interest to doctors all over the country, is the loan service which makes immediately available the greater part of the library resources. Photostat processes further extend its advantages for material which cannot be loaned. The value of the service which the Army Medical Library offers to the profession is incalculable and cannot be too highly appreciated.

Dr. John Ruhrah, of Baltimore, president of the association, next addressed us. Dr. Ruhrah has for years been an enthusiastic worker in behalf of medical libraries, and has always lent his efforts to the advancement of the work of the association.

*Read before the Orleans Parish Medical Society, July 18, 1927.

Following Dr. Ruhrah's address, Miss Jeanne Cameron, representing Dr. Charles F. Wylde, of McGill University, explained the operation of a self-owned bindery from experience in their own library. Their records show that commercial binding was costing them an average of $2.36 per volume for ½ leather and buckram binding. The style of binding was changed to ½ buckram and marble paper and the last five years with their own bindery have shown the average cost per volume to be $1.27. Equipment (cutting machines, presses, etc.) amounted to $616.45. All book-keeping and record making is done in the library. Liberal discussion brought out advantages and disadvantages of the idea. For our own use the innovation is impracticable, since our binding in full buckram—better material than ½ buckram and marbled paper,—is costing us on an average only about $1.40 per volume including freight one way to bindery, to say nothing of the cost of bindery equipment and the extra labor cost necessitated in the book-keeping, which would surely amount to more than 13 cents per volume. Furthermore, labor in Canada is cheaper than with us, which would increase bindery overhead here.

Next Dr. Archibald Malloch described for us the new building of the New York Academy of Medicine. Photographs and floor plans made his explanation more graphic. This library now comprises over 141,000 volumes, and Dr. Malloch gave an interesting account of the problems confronting them in moving into their new quarters. It is noteworthy to mention that there are in this spacious new building fifteen small cubicles for private study on the three upper floors of stacks, which may be engaged by Fellows through the librarian. In addition, there are seven still quieter study rooms on the third mezzanine floor, which may be rented at fifteen dollars per month for not longer than three consecutive months for continued literary research. A bibliographical department has been inaugurated. For the preparation of a list on any subject a charge to Fellows is made of 50 cents per hour, and to the public of one dollar per hour. Translations can be secured at 75 cents per hour to Fellows and $1.50 to the public. A photostat room in the basement cares for the work of this nature at the usual costs per page. I mention the charge noted here for preparation of bibliographies because we have endeavored to do all this work in our library without any cost to the doctor, whereas the New York Academy of Medicine deems such specialized work worthy of a charge sufficient to help the department to self-support.

Monday afternoon we were privileged to witness the ceremony of the decoration of Dr. John S. Billings' portrait in the Army Medical Library. Lt. Col. Fielding H. Garrison spoke of Dr. Billings as he had known him and of his work for the Army Medical Library. He introduced Dr. William Sydney Thayer of Baltimore, who delivered an impressive tribute to Dr. Billings and placed the beautiful wreath beneath his portrait.

Following this, Lt. Col. Garrison explained for us the conjunction of the Quarterly Cumulative Index and the Index Medicus. The two series have combined with the beginning of 1927 under the title of Quarterly Cumulative Index Medicus. The entries given formerly only in the Index Medicus are still prepared in the Army Medical Library and forwarded to Chicago for combination with the ones included in the Quarterly Cumulative Index. All publication work is done in the A. M. A. office. Foreign entries are given under subject in English and under authors in the original language. This combining of forces marks a distinct advance and will aid reference work materially. The checking of index with index was of necessity a laborious process and this co-operative step should be highly commended.

Mr. Charles Perry Fisher, of the College of Physicians, Philadelphia, next lead a discussion on the Importance of Incunabula, Early Printed Books and Classical Texts. Mr. Fisher showed us that the appreciation of the Incunabula of Medicine is a field too often overlooked in medical library circles. It is the cultural phase frequently neglected in the rush of practical affairs. He brought out the fact that the two fields are not competitive—the persons who might be interested in helping to build an historical collection would never give money for current texts, and vice versa. The College of Physicians has one of the best collections of medical incunabula in the United States, and Mr. Fisher's long and enthusiastic interest in this subject is in large part responsible for the position of his library in this field.

In this connection, I am glad of the opportunity to bring this subject before our own Society. In the accumulation of books and journals needed for current research, we have had no time to stress the historical side. The fact was brought home to me a number of times, while in Washington, that New Orleans is one of the oldest cities in the country and has a wealth of medical history of its own. There are doubtless many old tomes of medicine hidden away in New Orleans libraries which should be in our historical collection, and which we might have for the asking. I should be glad if the members of the Society would interest themselves actively in this idea. The library is glad to receive any and all medical material which you may be able to secure for us, old or of current interest, books or journals. If it is duplicate in our collection we can use in exchange with other libraries. Seach your own collections—inquire among your patients, particularly where it is known that there have been doctors in the family and let us start an historical collection of our own.

Monday night was the annual dinner of the Association, the only social function of the meeting. It was a real pleasure to talk medical books and libraries with others who meet day by day the same problems as myself.

On Tuesday morning, Mrs. Alice H. Holmes, of the Montefiore Hospital, New York, read a most illuminating paper on Periodical Deficiencies. This subject is of never-failing interest to librarians, as it is one of our most constant problems. Medical journals, particularly of the specialized type, have a comparatively small circulation and issue, hence the supply is quickly exhausted, and efforts to complete files for libraries are often most discouraging. It is for this reason that we are always glad for gifts of journals from private libraries. If they are duplicate in our collection, they may fill a long felt need in another library, and can thus be used in exchange for material which we do not have.

Following this, Mr. James F. Ballard, of the Boston Medical Library, presented the subject, Information, Reference and Bibliographic Service. Information service was designated as those questions which might be answered in hurry calls or by telephone—by directory, etc. Reference service is that requiring more exhaustive search, more complete data. Bibliographic service, the highest type, is that requiring painstaking and complete collection of references. Mr. Ballard's dissertation was illustrated throughout by examples of calls received in the Boston Medical Library. Valuable suggestions for the improvement of service in its various phases made the presentation most practical to every medical librarian. Discussions brought out special forms of service being offered in different libraries.

Tuesday afternoon we were taken on a tour through the Library of Congress, personally conducted by Mr. H. H. B. Meyer, ex-president of the American Library Association and Director of Legislative Reference Service in the Library of Congress. This collection of three and one-half mil-

lion volumes is today the third largest library in the world and considering its rate of growth, will doubtless be first within a comparatively few years. The 1926 appropriation approximates a million and a half dollars. In addition to books, the library contains almost a million maps and views, more than a million volumes and pieces of music and about 500,000 prints. The personnel of the staff and for building administration is about 500. While the primary service of the library is for legislative reference, its collections along diverse lines rival those of specialized libraries. In spite of the fact that the Army Medical Library receives first choice of medical material, the Library of Congress Medical Division contains over 60,000 volumes. The collection of books for the blind contains over 3,000 volumes in five styles of raised type. An effort is being made through local agencies to co-operate in furnishing the books in the styles of type most needed. A union catalog is in preparation which is already of incalculable value to research workers. Entries are here made of books, manuscripts, etc., not in the Library of Congress, noting where in the United States the book may be consulted—a veritable clearing house of reference information. A bibliographic division furnishes references to inquirers, by letter as well as in personal call. In the manuscript division are to be found the State papers of the early Presidents, and a huge collection which comprises source material for research workers and authors. Locked shelves are provided for the invaluable collection of rare books which may be consulted only under supervision, bespeaking the irreplaceable nature of the material. A Trust Fund Board has recently been founded by law, whereby bequests to the Library of Congress go directly to the care of this board, thus doing away with the red tape of passage through various governmental channels, necessitating a shrinkage of the funds. It is thought this will prove of great value in encouraging gifts to the library. In a beautiful music auditorium, funds for which were received in this manner, free concerts are offered for the enjoyment of music lovers. During 1926 there were daily 2,930 persons who visited the Library of Congress, showing in some degree the appreciation of the people of the United States for their National Library.

Tuesday evening I was privileged to hear the address of the President of the United States to the American Medical Association, followed by the address of the President of the Association.

I was invited by Miss Noyes, of the Medical and Chirurgical Faculty, Baltimore, to drive on Wednesday with about eight librarians to visit the Walter Reed Hospital. In this tour we were guided by two librarians of the hospital. I was particularly interested in the work in the field of occupational therapy and the newer field of book therapy, for the librarians make ward visits each week and are trained in the psychology of book selection as a means of therapy. Nothing has been done in the field of Hospital Libraries in New Orleans and I wish some of the hospital staffs might investigate the advantages offered in this innovation. I shall be glad to furnish informative material along this line to anyone interested.

Reference work in the Library of Congress and Memorial Continental Hall, and visiting the publishers' book exhibits at headquarters, completely filled the remainder of my time in Washington, except for two hours which I saved for a trip to that mecca of Americans—Mount Vernon.

In closing might I say just a word concering the work of the Medical Library Association. The value of the papers read at the Annual Meeting is evident. Of even greater value to libraries is the Magazine Exchange, maintained by the Association throughout the year. Lists of duplicates and lists of wants of library members, are broadcasted, checked and returned to the

Manager of the Exchange. This service has been of very great value to us in completion of magazine files since our reorganization began, seven years ago. Each year we receive many times the value of the annual fee of ten dollars for dues in the journals sent us through the courtesy of the Exchange. The Medical Library Association should have the enthusiastic support of all who are interested in medical literature, for libraries are the most potent factors in the encouragement of medical authorship and research, constituting a continuation school of medicine for the practicing physician.

THE BANANA AS A FOOD FOR INFANTS AND CHILDREN.*

L. VON MEYSENBUG, M. D.,
NEW ORLEANS.

Those of us who learned the science of infant feeding in the medical schools a decade or more ago must have been impressed with the monotony of the diet allowed the baby during its first year or two. Milk, either from the breast or bottle, formed the basis of the dietary (as it still does), but there existed a great fear of giving solid foods, to the extent that milk alone was given during the first twelve months of life.

In retrospect, we now see how groundless this extreme caution was, and as our knowledge of the physiology of the infant gastrointestinal tract broadens, we become ever bolder and more rational in our feeding of babies. Then, too, we have gained much valuable information from the careful chemical and biological analysis of our food stuffs, supplemented with animal feeding experiments. We think largely of foods in terms of their individual components: the number of calories per given weight, the percentage of fat, carbohydrate and protein, the mineral content and the vitamin coefficient. Finally, we group the various foods together and refer to certain standard diets such as the low protein diet, the carbohydrate diet, the antiketogenic diet and the ketogenic diet.

During the past year I have been using the banana as a supplementary food in infants and young children with a view to establishing its value as a suitable article of the diet in the normal child, as well as in certain diseases. This paper is intended as a preliminary report of this study.

Let me digress for a moment and refresh your memories as to the chemical composition and biological characteristics of the banana. We have available in the literature many analyses during all the stages of ripening of this tropical fruit. Pease and Rose[1] give these percentages: Carbohydrates, 22 per cent; protein, less than 1 per cent; fat, negligible. Of the total carbohydrate during ripening, Bailey finds the following: In the green banana, glucose 1.2 per cent; total sugars (glucose and sucrose), 7.7 per cent; total carbohydrate (starch and sugar), 21.5 per cent; in the green-yellow banana, glucose, total sugars and total carbohydrate as for the green fruit; in the yellow banana, glucose, 6.4 per cent; total sugars, 17.5 per cent; total carbohydrate, 22.1; in the yellow-brown fruit, glucose, 11 per cent; total sugars, 19 per cent; total carbohydrate, 20 per cent. Thus, we see a gradual splitting of the starch into simple sugars during the ripening process. Buignot[3] found that when the banana ripened on the tree, the glucose content was lower than when ripening occurred after picking. He failed to find the presence of amylase or other enzymatic activity in the banana to account for this conversion. Bailey,[4] however, found during maturation of banana, amylase, sucrase, raffinase, protease, lipase and peroxydase present. This same author likewise found the inner portion of the banana pulp

*Read before the Orleans Parish Medical Society, May 9, 1927.

to be sterile, the inner coat of the peel very sparsely inhabited by bacteria.

As regards the ash constituents, Sherman[5] gives us these percentages of the edible portion: CaO, 0.01; MgO, 0.04; K_2O, 0.50; Na_2O, 0.02; P_2O_5, 0.055; CL, 0.20; S, 0.013; Fe, 0.0006. Compared with other common fruits, such as the orange and lemon, it is low in calcium, high in magnesium, high in phosphorus, and has an iron content higher, small as it is, than any other fruit eecepting strawberries. There is approximately one calorie per gram of ripe banana pulp, or 447 calories per pound. Cellulose forms about 0.8 per cent of the total edible portion.

The presence of certain vitamins in the banana has been reported from many laboratories. With respect to the vitamin A or fat-soluble factor, Jansen and Donath,[6] Sopp,[7] Eddy and Kellogg,[8] and others, have found that the banana provides a good source of this vitamin, such that 0.5 per cent of banana added on a dry basis is sufficient to supplement a vitamin A free basal diet and prevent xerophthalmia in rats. Sugiura and Benedict[9] noted a deficiency in the water-soluble B factor in bananas. They secured growth and reproduction in rats but not lactation. Eddy and Kellogg,[8] however, demonstrated that, while the banana is not rich in this factor, it has about the same vitamin B value as tomato juice. That the fruit is a good source of Vitamin C or the antiscorbutic factor, all are agreed. Experimental and clinical scurvy has been cured by banana feeding. Lewis,[10] Givens and McClugage,[11] Hess and others, as well as my own experience in treating a case of scurvy, which will be reported elsewhere in detail, have found banana a good source of this vitamin.

The meager evidence at hand indicates that the banana is deficient in anti-rachitic properties. Evans and Burr[12] have recently reported the presence of vitamin E, though the report suggests that it is not very rich in this factor.

It is safe, therefore, to class the banana as an excellent source of vitamins A and C, a good source of B, deficient in D, and showing the presence of E.

We have in the literature several reports of banana feeding in children. Pease and Rose[1] report eleven cases in which it was used, the youngest child being two years of age. Irish[13] reports a case of celiac disease in a child 4½ years old successfully treated with banana diet. It is in this condition that banana seems of particular value. Haas[14] outlines a dietary regime for celiac disease, using banana as the principal source of carbohydrate. He reports in detail seven cases so treated with curative results. His youngest case was thirteen months old and received six bananas daily.

I have been unable to find any reports showing the use of banana in the young infant. During the past year I have fed banana to ninety infants ranging in ages from four months to two years. All of these were well infants, though many had not gained satisfactorily and several suffered from marked constipation. Various methods of preparing the fruit were tried out. These included mashing the banana with a spoon, mashing and pressing through a wire sieve, baking with and without the skin, and emulsifying the mashed pulp in the formula. I found the most satisfactory of these to be fruit pressed through the sieve.

It is necessary to explain in detail to the mother what is meant by a ripe banana. The skin must be entirely yellow, without green tips, and there should be brown or black spots. An all brown skin banana may be used if the pulp is not mushy or brown. Where the pulp is brown and has a transparent appearance, fermentation is taking place and such a fruit should be discarded. For baking, the banana need not be entirely

ripe. It is further necessary to explain to the parent why the traditional fear of the banana for the young child is without foundation, that it is not indigestible if ripe and suitably prepared. I have met with only one refusal to give it.

My records show that of these ninety babies to whom banana was given, only two could not tolerate it because of its laxative effect. The stools of these two became very soft, numerous and foul smelling. An examination of these stools showed an increase in fat and many small black threads which were fibres from the fruit. When beginning the banana feeding to a young infant of four or five months, only one teaspoonful of the mashed pulp is given for the first few days. If it is well borne it is increased cautiously up to about six or eight teaspoonsful. Very seldom does the infant refuse to take it—for the most part he cries for more. It is usually given at the 12 or 2 o'clock afternoon feeding hour, before the breast or bottle. If the infant refuses to take the banana the first day, it is offered again on subsequent days, and the dislike invariably changes to a desire for more. I have no record of any baby vomiting the banana.

It is in the constipated babies that some interesting results were obtained. Some were completely cured, others greatly benefitted. A single instance to illustrate:

Baby G. L., age 6 months, weighing 14 lbs. 10 oz., was breast fed from birth. She was normal except that she was underweight. Orange juice had been begun at one month, and cod liver oil, ½ teaspoonful twice daily, at six weeks. The mother stated that she thought she had sufficient milk, as she felt the breasts fill, become tense, and they leaked. However, the fact that the baby was underweight and markedly constipated, indicated that her supply must have been deficient quantitatively as well as qualitatively. Banana pap was begun at 6½ months in teaspoonful daily amount. On the third day the baby had its first natural bowel movement in two months and continued to have a daily action. Complemental bottle feedings brought about a good gain in weight.

That banana may cause rapid gain in weight when other food is not sufficient is shown by the following case:

Baby J. S., age 8½ months, weighing 16 lbs. 14 oz. He had been under observation since two months of age, at which time his weight was 9 lbs. 6 oz. He was breast fed exclusively up to four months, when complimentary feeding became necessary because of stationary weight and constant crying. His gain from then on was only fair, averaging not more than 10-12 oz. per month. At 8½ months banana pap was started and increased rapidly, so that at 9 months he was getting one whole medium sized banana daily. His bowels were regular and he took the fruit with zest. In two weeks he had gained 1 lb., no other changes having been made in his diet.

The character of the stools changes when banana is given. They assume a grayish color, are soft in consistency and show small grayish-black threads. These threads may alarm the mother, simulating pin worms except in color; under the microscope cellulose fibres are seen. Unless a diarrhea ensues there is no increase in the fat demonstrable with Soudan 3 stain. The threads referred to above are entirely harmless.

Of the diseases in which banana would seem to be especially indicated, I have treated one case of celiac disease in a child 2½ years of age, three cases of acute and subacute hemorrhagic nephritis and one case of scurvy in a baby nineteen months old. These cases are to be reported in detail elsewhere.

The banana is a fruit that has been referred to as the "poorman's fruit" because it is plentiful and cheap, is a dietary offering that nature has packaged in an almost sterile container. The fat and protein factors are negligible, the chief food constituents are the carbohydrates, which amount to about 22 per cent. In addition to the easily assimilable carbohydrates of the ripe fruit, it is a good source of lime and iron, and offers abundant vitamins, excepting the antirachitic factor. As an antiscorbutic it is second only to orange juice. Its caloric value is high—much higher than

that of any of the common fruits, and, pound for pound, its energy value is greater than that of the white potato, and cheaper. Infants as young as four months tolerate ripe banana perfectly; give the older children ripe banana instead of candy and you will have no cause to regret it.

DISCUSSION.

Dr. Charles Chassaignac (New Orleans): The essayist has handled his subject well and is to be congratulated. Aside from the general interest of the paper, the topic, to me, is one of particular interest, because it takes me back a good many years (I won't say how many) in the days of my general practice. Guided by an elder practitioner of that time, Dr. Shepard, whom very few of you remember, I was led to the feeding of bananas to infants in the manner described, and with the same good results spoken of tonight.

Two points which have already been brought out are well worth stressing: the ripeness of the banana and its preparation. The so-called ripe banana is a beautiful fruit, nice and yellow and decorative, but it is not what the fruit should be; the truly ripe banana is thoroughly mottled with little brown dots over the yellow skin. Never err by feeding the banana not quite ripe. The truly ripe fruit has an analysis quite different from the so-called ripe banana, nor does the difference between them end there, for the deliciousness of the former is not approached and the assimilation differs to the same extent.

As the doctor brought out, for the infant and the small child, the banana ought to be well crushed and well broken up. The danger is when the child is a little older and starts chewing; if given a banana, even though fairly ripe, he is apt to bite into it, but not knowing enough to chew well, swallows pieces of the unmasticated fruit, with resulting indigestion. Most of us have had experience from bananas eaten that way. These are the two things that have brought the banana into disrepute, one that they are not thoroughly ripe when eaten; the second, that the child is given the banana before it is able to masticate.

Dr. J. Birney Guthrie (New Orleans): Dr. von Meysenbug's paper is of very considerable interest, not only to the dietitian, but to the internist. Heretofore, the feeding of bananas to infants and children has not been done to any great extent.

I have little to do in the way of ordering diets for infants. Some of my colleagues are good enough to take this work off my shoulders. Much of our information regarding the handling of digestive disturbances in the adult comes to us through the pediatrist. It seems to me that we can use this information in the handling of diseases of all types in which this food is suitable where we are dealing with the child. For instance, as the doctor spoke, it occurred to me that the banana might prove to be a good supplementary food from a standpoint of carbohydrate richness and vitamin content for the typhoid patient.

Sunlight acting on vegetable cell is the origin of the vitamin, the only origin. We lose sight of that fact in the study of tissues like liver, which we know is a storage for vitamins, but the ultimate source, we believe, is always the vegetable cell. The liver of the cod acts only as a storage place.

The question of vitamins is not so acute with us in a short illness, or in infant feeding, if the mother and cows can get plenty of green foods, but it is a matter of vital importance to children in regions where the winter is prolonged and where we find in the food of the mother and the cow a vitamin deficiency. In proving the digestibility of the banana, Dr. von Meysenbug has given us a point of approach which should be exceedingly valuable in the feeding of sick adults as well as children.

Dr. Roy E. de la Houssaye (New Orleans): Aside from the ripeness of the banana, I think it would be well to emphasize that the fruit should be cut from the bunch and put aside to ripen. Never choose a loose banana that has been lying on a banana stand or any banana unless the skin at both ends is intact; this is the only way you can insure against contamination.

Dr. Ludo von Meysenbug (closing): I thank you, gentlemen, for your kind discussion of my paper.

Some of my friends sitting near me, have asked: "What is celiac disease?" Celiac disease is a chronic intestinal indigestion, inability on the part of the infant to digest fat and carbohydrates, with ability to digest proteins. Hence, the feasibility of the banana carbohydrate, since the baby, who is unable to tolerate even a fraction of carbohydrate in the form of milk-sugar or glucose, can digest, absorb and utilize with particular ease the carbohydrate of the ripe banana, which is largely composed of split-carbohydrate (in the ripe fruit 22 per cent), that the celiac infant can utilize perfectly.

I am glad that Dr. Chassaignac emphasized the points of ripeness and preparation, which I touched on in my paper. The unripe banana is spoken of as concentrated essence of stomachache. The young child is often given a banana at home, or

grabs it off the side-board and no attention is paid to the manner in which he bites off big pieces and swallows them before they are thoroughly masticated.

In the adult diet of which Dr. Guthrie spoke, I see no reason why the banana should not prove very valuable, particularly in nephritis. There is less than one per cent (1%) protein, and the carbohydrate is certainly as essential to the adult as to the infant and the child.

Dr. De la Houssaye's point is important, viz: that the banana should be taken off the bunch with the so-called "finger" left on so as to avoid oxidation and contamination of the pulp. It should be purchased semi-ripe and allowed to ripen in your own ice box, or outside, or wherever you choose to keep it.

REFERENCES.

1. Pease, M. C., and Rose, A. R.: Am. J. Dis. Child. 14:370, 1917.
2. Bailey, E. M.: J. Biol. Chem. 1:355, 1906.
3. Buignot, quoted by Bailey, E. M.: J. Biol. Chem. 1:355, 1906.
4. Bailey, E. M.: Proc. Am. Soc. Biol. Chemists, 2:76, 1910-13.
5. Sherman, H. C.: Chemistry of Food and Nutrition, 3d ed. enl. N. Y., Macmillan, 1926, p. 332.
6. Jansen, B. C. P., & Donath, W. F.: Mededeel v. d. burgerl. geneesk. dienst. in Nederl. Indie, 1924, pt. 1:25.
7. Sopp, Eva: Norsk. Mag. Laeger, 32:732, 1924.
8. Eddy, W. H., & Kellogg, M.: Am. J. Pub. Health, 17:27, 1927.
9. Sugiura, K., & Benedict, S. R.: J. Biol. Chem. 36:171, 1918.
10. Lewis, H. B.: J. Biol. Chem. 40:91, 1919.
11. Givens, M. H., McClugage, H. B., & Van Horne, E. G.: Proc. Soc. Exp. Biol. & Med. 18:140, 1921.
12. Evans, H. M., & Burr, G. O.: Anal. Rec. 29:356, 1925.
13. Irish, H. E.: Arch. Ped. 43:533, 1926.
14. Haas, S. V.: Am. J. Dis Child. 28:421, 1924.

FOREIGN BODIES IN THE AIR AND FOOD PASSAGES.*

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NEW ORLEANS.

Although the recognition of foreign bodies in the air and food passages is almost as old as the history of medicine, no considerable headway was made in the removal of these intruders until the advent of esophagoscopy and bronchoscopy. The first direct esophagoscopy was accomplished by Adolph Kussmaul in 1868.(1) The first bronchoscopy of clinical significance was done by Gustav Killian in 1897, who removed a bone from the right bronchus.(1) Work was then taken up by a few hardy pioneers, Ingals, Coolidge, Jackson, Yankauer and others. The tap root of bronchoscopic progress sinks deep in the devoted labors of Chevalier Jackson, to whose teachings is largely due the present widespread interest in the subject. Unfortunately, however, in spite of the teachings of these earnest workers, the endoscopist is often confronted with cases of foreign bodies in the esophagus in which antiquated, ineffective and dangerous methods of removal have been attempted. During one week recently the author saw two cases in which the bristle probang had been used in attempts at removal of sharp pointed foreign bodies of the esophagus with the production of dangerous traumatic esophagitis and failure to remove the intruder. The bristle probang, the coin catcher and the bougie have no place in the modern treatment of foreign bodies of the esophagus.

In this paper are reported twenty cases of foreign body of the esophagus, and a fatal case of organic foreign body of the right bronchus.

FOREIGN BODY OF THE RIGHT BRONCHUS

Case 1. B. K., age 2 years, 6 months, referred by Drs. Butterworth and Williamson because of a foreign body (red bean) in the right bronchus for forty-eight hours. While playing with a red bean in his mouth, the baby tipped over backwards on his kiddie car and aspirated the bean. The immediate symptoms were choking, coughing and retching for about three minutes, during which time he was extremely blue. Following this the child had symptomless intervals but spells of cyanosis and choking recurred from time to time during the following forty-eight hours. He was brought to Dr. Butterworth, who made the diagnosis of foreign body in the bronchus. A skiagraph by Dr. W. F. Henderson showed complete collapse of the right lung. There was absence of breath sounds, dullness and limitation of expansion, all on the right side.

*Read before Louisiana State Medical Society, New Orleans, April 26-28, 1927.

Case 1. Foreign Body (red bean) in right bronchus. Note deviation of trachea to right.

At 11 A. M. bronchoscopy with the 4 mm. Jackson tube was done witnout anesthesia on account of dyspnea. A marked tracheo-bronchitis was present and the cough reflex was very much diminished. The soft, friable and swollen red bean was encountered in the right bronchus, completely closing it, and was removed with side curved forceps.

For about six hours the condition continued bad, with respiration rapid, labored and shallow; oxygen was given. At 5 P. M. the color was better and the respiration was much improved. During the next five hours the condition was good, but the respiration gradually became obstructed from subglottic edema, until at 11 P. M. there was marked difficulty in respiration and pronounced indrawing of the supraclavicular and intercostal spaces on inspiration. Tracheotomy, done at 11:30 P. M., gave immediate relief from the respiratory obstruction. The condition continued good until 10 A. M. the following day, when there was a rather sudden and startling devlopment of inspiratory obstruction. Aspiration of the bronchi with a small catheter suction passed through the tracheal tube was of no benefit. The child's condition rapidly became desperate and he was hurried in an unconscious and apparently dying condition to the operating room, where bronchoscopy revealed thick sticky secretions of about the consistency of half dried glue lying at the carina and almost completely obstructing both bronchi. This was removed and the baby gradually improved until his condition appeared good. The picture changed from that of a child on the verge of death and unconscious from asphyxia, to that of a child playing happily with the electric light by his bedside. This gratifying condition continued for nearly twelve hours when it again became evident that bronchial obstruction was developing. Respiration became extremely labored. Bronchoscopy, which was plainly imperative to save the child from immediate death, was done and a plug of inspissated mucus about the size and consistency of a raisin was removed with forceps from the left bronchus. Remarkable improvement resulted and persisted for several hours, but the interval between periods of bronchial obstruction became shorter and bronchoscopy, which was done only as a last resort to save the child from immediate death from asphyxia, became necessary more frequently. Accessory measures used in efforts to improve the child's condition were steam inhalations under the croup tent, oxygen, expectorant mixtures (which apparently had no effect on the thick sticky secretions), and hypodermoclysis. At various times when he was in extremis, atropin, camphor in oil and adrenalin were administered. The author remained constantly with the child after the second bronchoscopy, but his efforts were unavailing and the little patient died on the fourth day after the removal of the foreign body. At the last bronchoscopy just before death the walls of the larger bronchi were somewhat edematous, but no obstructing secretion was visible; evidently the smaller inaccessible bronchioles were obstructed. At this time ephedrin was applied directly to the larger bronchi, but produced no improvement and apparently had no effect other than a blanching of the mucosa where it was applied. Just before death breath sounds could be heard only over the right upper lobe, which it will be remembered was on the side of the original massive atelectasis. Culture from the bronchi showed staphlococcus.

The dryness of the tissues, the absence of cough reflex, the lack of liquid discharge and the evidence of mechanical obstruction to respiration in the lower tracheobronchial tree, show the striking similarity of the tracheo-bronchitis in this case to the cases of infective laryngotracheo-bronchitis which simulate diphtheria. T. R. Gittens,[2] in describing tracheo-bronchitis says: "In those instances where there seemed to be a decided lack of liquid discharge and a dryness of the tissues, accompanied by evidence of mechanical obstruction to breathing below the

tracheal cannula, measures which helped to liquefy the scanty discharge and allow of its removal by suction played a prominent part in determining the outcome. In this relation adrenalin, one to ten thousand, in two to four minim amounts, dropped into the tracheal cannula, seemed of value in making the discharge thinner and stimulating cough reflex. * * * *In two or three cases the bronchoscope was used for the removal of semisolid masses. The use of the bronchoscope following tracheotomy takes the same place as an emergency measure as the insertion of the tracheal cannula does earlier in the disease." Gittens,[2] reporting an autopsy in a case of infective tracheo-bronchitis dying of obstruction of the small bronchi, found scanty sticky discharge in the trachea and large bronchi, but in the smaller bronchi and bronchioles the brown semisolid discharge practically blocked the lumen, accompanied by edema of the mucous membrane; confirming his belief that the serious symptoms were due to mechanical obstruction rather than toxemia.

There is marked contrast in tracheo-bronchial reaction to metallic foreign bodies and to those of vegetal nature. As pointed out by Jackson,[3] non-obstructive metallic foreign bodies afford few symptoms and few signs for weeks or months, while vegetable organic foreign bodies as peanut kernels, beans, watermelon seeds, etc., cause at once violent laryngo-tracheo-bronchitis, with toxemia, cough and irregular fever, the gravity and severity being inversely to the age of the child.

FOREIGN BODIES OF THE ESOPHAGUS

Case 1. Miss B. R., age 18 years. At dinner the day before she swallowed a chicken bone which she felt lodge in the throat. A radiograph showed no evidence of foreign body. At esophagoscopy under ether anesthesia with the Mosher esophagoscope the chicken bone was found in the thoracic esophagus, and was removed with forward grasping forceps. The recovery was uneventful and the patient was discharged the following day.

Case 2. Tom O., age 3 years, 6 months. At dinner he had been given a bite of fish by an older child and had immediately choked and gagged and complained of pain at about the region of the suprasternal notch. A skiagraph was negative for foreign body. At esophagoscopy, with the esophageal speculum, about two hours after the accident, a fish bone was removed with alligator forceps without anesthesia. The baby was discharged the following day.

Case 3.,Victor P., age 14 years. At dinner the previous day while eating soup, he choked on a bone. Following this he was unable to swallow solids and had pain at the supra-sternal notch with every swallowing movement. At esophagoscopy under ether anesthesia, a flat triangular piece of beef bone was found at the cricopharyngeus, and removed with alligator forceps. Recovery was uneventful.

Case 4. Mrs. M., age 82 years. Since swallowing a chicken bone the previous day she has taken only liquids and has had pain at the suprasternal notch on swallowing. At esophagoscopy with the esophageal speculum under ether anesthesia the bone was found just below the cricopharyngeous. The intruder was grasped with the alligator forceps and brought up to the cricoid region where it slipped out of the grasp of the forceps and so rapidly descended to the stomach that another opportunity was not offered to grasp it. Recovery was uneventful.

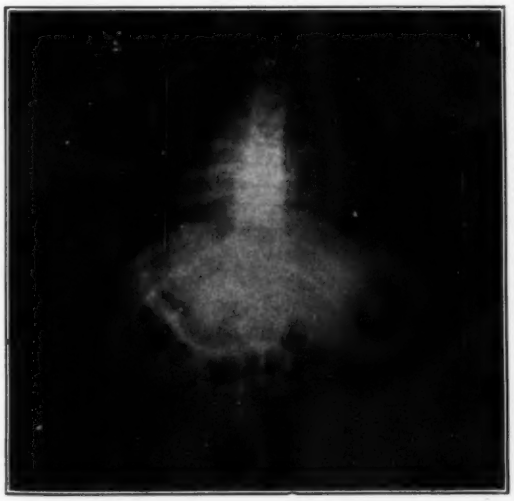
Case 5. Miss G. C., age 32 years. Had had a chicken bone in the esophagus for three days. On admission, the temperature was 100.2; the patient had been taking only liquids and complained of pain above the suprasternal notch. Blind attempts had been made in her home city to force the object down with a bougie. Under ether anesthesia, esophagoscopy with Jackson's 10 mm. tube revealed a mass of meat in the cricopharyngeal region covering a large irregular chicken bone, which was removed with side curved forceps. The bone was of such shape that it could not be turned in any position in which points would not present laterally. Consequently the blind attempts elsewhere at forcing the bone down had not only not been successful, but had been associated with the great hazard of perforation of the esophagus with the sharp points of the foreign body.

Case 6. Miss L. H., age 82 years. Four days before admission the patient had swallowed a chicken bone, since which time she has had a sticking sensation in the region of the suprasternal notch and has been able to swallow only liquids. Under fluoroscopy a ten-grain barium capsule was seen to be arrested in the esophagus at the suprasternal notch. The temperature on admission was 100.6. Esophagoscopy revealed

the cricopharyngeal region of the esophagus to be edematous and with small varicosities of the mucosa. Two small masses of white meat were removed from this region immediately, but no bone was found in a search of the entire esophagus. The shrivelled up barium capsule was found in the middle of the thoracic esophagus and removed. The patient was discharged from the hospital in seven days, after gradual subsidence of fever and dysphagia. Evidently her symptoms were due to esophagitis from trauma produced by a foreign body which had passed on.

Case 7. Mrs. M. G., age 45 years. Referred by Dr. Maes. Had had a goose bone in the esophagus for six days. Since the accident the patient had had pain at the suprasternal notch on swallowing. There was a history of three attempts to remove the bone by indirect methods, occupying about three hours, in her home city; on one of these attempts the bristle probang was used. Under ether anesthesia, the foreign body was removed from the cricopharyngeal region of the esophagus in less than two minutes with the esophageal speculum and alligator forceps. The patient was discharged the following day.

Case 8. Frank D. J., age 1 year. Referred by Dr. Loeber. Had had an open safety pin in the esophagus for one hour. A skiagraph by Drs. Samuel and Bowie showed the pin open and the point up in the cricopharyngeal region of the esophagus. With the 7mm esophagoscope and Tucker tack forceps, the pin was removed at esophagoscopy by the point sheathed method, under ether anesthesia. The child was discharged the following day.



Case 8. Open safety pin, point up, in esophagus. Baby aged one year.

Case 9. Pin in pharynx. The entire shaft was buried in the tissues of the neck; only the head was visible.

Case 9. Doris A., age 11 months. Had had a pin in the pharynx for one hour. The baby had put an ordinary straight pin in the mouth and during the grandmother's digital efforts to remove it, had presumably swallowed it. The skiagraph by Drs. Samuel and Bowie showed the pin at the level of the hyoid bone with the point forward. An examination under ether anesthesia with the direct laryngoscope failed to reveal any foreign body in the region indicated by the skiagraph. The entire throat from the nasopharynx down to the pyriform sinuses was carefully examined, but no evidence of foreign body was found. Esophagoscopy was done down to the crossing of the arch of the aorta. The region of the cricopharyngeus was particularly thoroughly examined. There was no evidence of foreign body in any of these locations. Another skiagraph was made which showed the foreign body still in the same location. Anesthesia was continued and the child's pharynx was then palpated with the finger and after some little search, what seemed to be the head of a pin, was felt to the left of the glosso-epiglottic region. Then a glimpse of the pin head was finally obtained and immediately lost. After several minutes more search the head of the pin was again seen, grasped with forceps and removed. With the exception of its head, the pin had been completely buried in the tissues of the child's neck by the efforts of the grandmother to remove it. Tetanus antitoxin was given and the patient was discharged the following day.

Case 10. Broken ring in the esophagus.

Case 10. Sarah M. S., age 2 years, 6 months. Referred by Dr. W. F. Henderson and Dr. L. C. Spencer. Broken ring in the esophagus. The baby swallowed an incomplete ring, broken from a toy, four hours before admission. A skiagraph by Dr. Henderson showed the foreign body in the cricopharyngeal region of the esophagus. Under ether anesthesia the object was removed with the esophageal speculum and alligator forceps, the ring being turned to let the open part trail, thus avoiding entangling the walls of the esophagus wth the points. The baby was discharged the same day.

Case 11. Mr. Gerard H., age 78 years. Meat in the esophagus. Four days prior to admission he choked on a piece of meat, after which he was unable to swallow solids or liquids. Fluoroscopic examination, without barium, showed no evidence of foreign body in the esophagus. At esophagoscopy with the Jackson 10mm. tube under ether anesthesia, a large, partially decomposed and very foul mass of meat was removed from the neighborhood of the arch of the aorta. No esophageal pathology was found and deglutition was normal after removal of the meat. The patient was discharged two days after esophagoscopy.

Case 12. Mrs. J. M., age 33 years. Referred by Dr. A. F. Hebert. Meat in the esophagus. While convalescing in the hospital from a laparotomy, the patient, while eating, suddenly became unable to swallow anything, even saliva. Fluoroscopic examination by Drs. Samuel and Bowie showed an impermeable obstruction to the barium mixture at the level of the arch of the aorta. At esophagoscopy with the 10mm. Jackson tube under ether anesthesia, a foreign body consisting of a very large bolus of meat was found in the region of the arch of the aorta. Part of this mass was picked out with the side curved forceps and the remainder was dislodged and followed into the stomach with the esophagoscope. This patient had an indefinite history of esophageal stricture, but direct inspection through the esophagoscope in this case served a double purpose by showing conclusively that no stricture existed. The patient was discharged two days after esophagoscopy.

Case 13. C. R., colored female, age 40 years. Orange seed between two excentric esophageal strictures. The patient had swallowed lye thirty-seven years before, but had had no dysphagia until she choked twenty days ago while eating an orange, since which time she had been able to swallow only very small amounts of liquids. She had lost twenty-five pounds in twenty days and felt very weak. Fluoroscopic examination by Dr. W. F. Henderson showed an almost impermeable esophageal obstruction to the barium meal at the level of the aortic arch. At esophagoscopy, without anesthesia in the out patient department of Touro Infirmary, a stricture just too small to pass the 7mm. tube was encountered twenty-three centimeters from the upper incisor teeth; about five centimeters beyond this a foreign body could be seen lodged in a second stricture. The intruder (an orange seed) was removed and the patient immediately drank a glass of water without difficulty. She was cautioned about having her food finely divided, and when seen four days later was swallowing without any trouble.

Case 14. Victor B., age 2 years. Referred by Dr. Loeber. Coin in the esophagus eight days. The mother had found the baby choking and gagging shortly after she had given him a nickel eight days before admission. The baby either refused or regurgitated solid food, and occasionally vomited clear fluid. Skiagraph by Dr. W. Henderson showed the coin in the esophagus at the level of the suprasternal notch. The object was removed, without anesthesia, with the alligator forceps and esophageal speculum.

Case 15. William B., age 2 years. Coin in the esophagus eight days. Skiagraph by Drs. Samuel and Bowie showed coin in cricopharyngeal region of the esophagus. The nickel was removed, under ether anesthesia, with the esophageal speculum and alligator forceps. Uneventful recovery.

Coin, five-cent piece, in the esophagus.

Case 16. Leona H., age 1 year, 6 months, colored. Had had a coin (penny) in the esophagus for eighteen days. Since swallowing the coin the baby has taken only liquids, and had been very fretful. Skiagraph by Dr. Henderson showed the coin in the cricopharyngeal region of the esophagus. The coin was removed in the out patient department of Touro Infirmary, without anesthesia, with esophageal speculum and alligator forceps. Recovery uneventful.

Case 17. Baby Jane A., age 2 years. Referred by Dr. DeBuys because of a coin (nickel) in the esophagus for six days. The child had been unable to take solid food, very fretful and had moist rales over both lungs. Skiagraph showed the coin in the esophagus at the level of the suprasternal notch. At esophagoscopy, without anesthesia, the coin was removed from the cricopharyngeal region of the esophagus with alligator forceps and esophageal speculum. Uneventful recovery.

Case 18. Louis P., age 20 months. Had had a penny in the esophagus for four days, with dysphagia for solid food. Fluoroscopic examination showed the penny in the esophagus at the level of the suprasternal notch. At specular esophagoscopy, without anesthesia, no foreign body was found at this point, and an immediate second fluoroscopic examination showed that the penny had descended in the esophagus to the level of the arch of the aorta, from which location it was removed by esophagoscopy under general anesthesia. The child was discharged the same day.

Case 19. Alfred D., age 2 years, colored, had swallowed a penny half an hour before. This was removed without anesthesia from the cricopharyngeal region of the esophagus with alligator forceps and esophageal speculum. Uneventful recovery.

Case 20. Ralph McD., age 3 years, with a penny in the esophagus for one hour. Fluoroscopic examination showed the coin in the esophagus at the level of the suprasternal notch, from which location it was removed at esophagoscopy under general anesthesia. Uneventful recovery.

CONCLUSIONS.

1. Indirect and blind methods of removal of foreign bodies from the esophagus are not only highly ineffective, but are exceedingly dangerous.

2. The removal of foreign bodies in the air and food passages is best accomplished under direct vision with endoscopic means.

3. Symptoms of choking and gagging in a child call for the exclusion of foreign body in the diagnosis, and the possibility of foreign body should be considered until physical examination, roentgen ray and possibly endoscopy have proven negative.

4. Dyspnea in a patient wearing a clean tracheotomy tube and not relieved by the suction catheter calls for bronchoscopic examination. The obstruction may be in

the bronchi, and may be relieved through bronchoscopy.

BIBLIOGRAPHY.

1. Gittens, T. R.: Membranous Laryngitis and Tracheo-bronchitis (Non-diphtheritic). Ann. Otol. Rhin. & Laryng., 35: 1110, 1926.

2. Jackson, Chevalier: Bronchoscopy and Esophagoscopy. Philadelphia. W. B. Saunders Co., 1922, p. 145.

3. Patterson, E. J.: History of Bronchsocopy and Esophagoscopy for foreign bodies. Laryngoscope, 36: 157, 1926.

DISCUSSION.

Dr. S. M. Blackshear (New Orleans): This paper is of too much importance to go without some discussion. I would like to stress the difference in seriousness of organic foreign bodies and inorganic foreign bodies in the air passages.

Such foreign bodies as peanuts, beans, grains of corn and others which are likely to undergo decomposition are very much more dangerous than nails, beads and such bodies that have no tendency to disintegrate.

I recall a case in which a child had aspirated a red bean and on the fourth day I did a bronchoscopy, finding the bean in the left bronchus. By this time it had become soft and swollen with a tendency to sprout, and whenever it was caught by forceps it broke in pieces. I removed whatever pieces I could see, but was unable to get it all out. Several days later the child died of bronchial pneumonia.

We often see and hear of instances where patients have carried metal or glass foreign bodies in their air passages for months and even years without serious results.

Recently I saw a man who had had a laryngectomy done on him thirteen years before and, having worn out his tracheotomy tube, which had sawed a fistula through the trachea to the esophagus he decided to make a tube for himself. He sawed off a piece of copper tubing from an old boat and bent it to what he thought the proper shape and wrapped fishing line around the upper end of it to serve as a flange to keep it in proper position. However he did not use enough fishing line and the tube slipped down the trachea and into the left bronchus. I saw him about nine or ten hours later and removed the foreign body by lower tracheo-bronchoscopy. He had no bad results from the foreign body in his bronchus, but when I last saw him he still had the fistula between the trachea and esophagus.

Dr. H. L. Kearney (closing): The diagnosis of foreign bodies is usually made by the general practitioner, who generally sees these cases first. Symptoms ordinarily produced by these conditions are very distinct. Among the diagnostic signs of foreign body of the bronchus is asthmatoid wheeze, mentioned by Dr. Chevalier Jackson. It may be absent, it may be heard only with the stethoscope bell held at the patient's open mouth or it may be audible at some little distance from the patient.

The point brought out comparing the urgent symptoms from organic foreign bodies (peanuts, beans, etc.) of the bronchus with the very much milder reaction to inorganic foreign bodies (metallic bodies, etc.) is very important.

REVIEWS

A REVIEW OF THE USE OF MERCUROCHROME IN THE PAST YEAR AND A HALF.

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HISTORY.

Since the advent of salvarsan, medical men have been hopefully expecting, from their scientific laboratories, the production of an efficient, general antiseptic. In 1919, Young, White and Swartz, at the Johns Hopkins Brady Urological Institute, after an elaborate study of various dyes, in the search of a competent urinary antiseptic, produced what is known today as mercurochrome 220 soluble. It is essentially the sodium salt of di-brom-oxy-mercurifluorecein. The drug contains 26 per cent mercury. It was developed during the war specifically as an agent for the local treatment of gonorrhea.

In November, 1922, Piper of Philadelphia, published a report of the first instance in which mercurochrome was used intravenously in the human body. The cases were of puerperal septicemia, and although the therapeutic effect was not conclusive,

he brought out the possibility of its use intravenously. Hill and Colston at the Brady Urological Institute, in 1923, showed that a transient bacteriostatic effect could be produced in the blood and urine of rabbits, by such intravenous injections of mercurochrome.

Young and Denny studied a series of blood stream infections in the human body, treated by injections of this drug. In 1923, they made such a favorable report, and impressed the medical profession so favorably, that its use was started throughout the country. This announcement was followed by a panicky and almost hysterical optimism as to its value, and everywhere it was used to combat every possible infection, localized, or generalized, accessible or inaccessible, even to conditions where the etiological factor was not established, as in pernicious anemia, in the hope that it was caused by some obscure infection.

This era was shortlived. The discouraging results following this abused use of the drug in a haphazard manner, led many to doubtful interrogation, sober reflection, and in some quarters even to complete rejection of this substance as a useful and safe therapeutic agent.

A survey of the literature reveals innumerable reports of cases and one can rarely read a medical journal without finding someone's opinion on the subject. This mass of evidence is so contradictory in character that it is a difficult problem to make a valid estimate of this rather promiscuously used form of therapy.

In attempting to correlate the different views offered by those who have studied this problem, I have divided this survey according to the various diseases treated with this drug.

DISEASES TREATED WITH MERCUROCHROME.

Local Application.—After seven years' trial it stands established as a local disinfectant. It is now used in a 2 per cent solution, as a prophylaxis of infection, in the minor wounds and abrasions by laymen. It has to a great extent replaced iodine in these cases, as it causes only slight irritation if any, is capable of ready penetration to the deeper tissues, possesses a high germicidal activity, is highly soluble and has but a slight toxicity. In sharp contrast to other disinfectants employed by the laity, its freedom from danger is of importance, since, even if 2 ounces of a 2 per cent solution, the amount usually purchased, be swallowed, only stomatitis or diarrhea would be the worst result. In the preparation of body surfaces for major operations, it is now used routinely in some hospitals.

Septicemia.—It is in this condition that so many controversies have arisen as to the value of mercurochrome. Marvelous cures have been reported, of cases in which the drug was used as a last resort. Many seem to think that the administration of the drug was a coincidence with the recovery of the patient, as it is a well known fact that recovery occurs very rapidly in such conditions. However, cumulative evidence such as has been published, becomes impressive, and must be given due weight.

Young's report, of 1925, states that it is a drug, the usage of which in a great variety of septic conditions seems justifiable. He modifies his previous claims of a high percentage of cures and in this report, which covers 211 cases, 57 of which were septicemias, he admits of 42.3 per cent recoveries, 38 per cent improvement and 24 per cent failures. The septicemia cases were of various origin: urinary, throat infections, sinus infections, osteomyelitis, puerperal endocarditis, transmitted at or following operation, and others of unknown origin. Dudgeon presents 150 cases of acute bacterial infections, similarly treated, with good results. Only 20 per cent received no benefit. No sudden arrest of the process was noted in any of the cases but some required only one or two treatments for improvement to occur.

Hill and Bloodgood, of Johns Hopkins, are of the opinion that streptococci viridans infections never respond to this treatment, while other types of streptococci and staphylococci respond fairly well.

Horsley of Virginia treated 12 cases, of which, only 1 was cured, 3 improved, 6 showed slight improvement and 2 were unimproved. Six of these patients died and the infection in 5 of these was caused by streptococci and one by pneumococci. He is of the opinion that mercurochrome should be given only after all the customary methods have failed or show too little improvement.

Lowenberg claims that the value of the drug has not been shown and has still to be proven. His series includes 3 cases of endo-pericarditis with effusion. Of these, one was cured but the heart was left damaged, five cases of pneumococcal and streptococcal peritonitis, all of which died.

Although none of the above authors used controls in their trial of the drug, there seems to be sufficient evidence that mercurochrome is a valuable drug in this type of case, principally in those due to Gram negative bacilli, streptococci and staphylococci. Many other individual cases have been reported but not included here, in which mercurochrome proved valuable.

One of the mistakes made in the treatment of such cases is that of waiting too long before administering the drug, and then expecting wonderful results, after the patient is in a moribund condition.

Pneumonia.—The most recent and valuable contribution in this type of case comes from Hoppe, Goldsmith and Freeman in Atlanta, Ga. Experimenting on rabbits, they found that after an injection of mercurochrome, the lung tissue juice became inhibitory to bacterial growth. All three types of pneumococci, streptococci hemolyticus and staphylococci were inhibited. Further, no pathological lesions were found in the lung following the injection. The drug was administered intraperitoneally and completely absorbed, leaving no pathology.

They then treated 180 cases of lobar and lobular pneumonia, half of which received the mercurochrome treatment, and the other half the routine treatment, to be used as controls. The average duration of the illness in the control cases was 13.3 days and the duration with the administration of this drug was only 5.9 days. Their mortality rate was decreased from 32.2 per cent to 8.9 per cent.

Previous to this, the medical department of the United Fruit Co., in 1924, reported lowering their mortality rate from 49 per cent to 20 per cent in both lobar and lobular pneumonia. Young in 1925 reported a series of 22 cases in which he obtained an improvement or abortion of the infection in 85.3 per cent of the cases.

These well controlled cases should prove conclusively that this form of therapy is of value in the treatment of pneumonia.

Genito-Urinary Infections.—Previous to the past year it was in this field that the results with this drug was most unsatisfactory. Considerable work along this line has been done lately, with good results. The most interesting contribution comes from Potter and Redwell in California. They used a combination of mercurochrome, foreign protein, and sugar injections in the treatment of gonnorrheal infections, on the assumption that milk and sugar activates the mercurochrome to increase its bacteriostatic power, its power of penetration and its permeability of the tissues. It also stimulates a greater secretion of the dye from the glands. Two hundred cases were treated, with striking results in acute gonorrhea.

In their animal experimentation they showed that this combination clears up a staphylococcus infection faster than when either mercurochrome or foreign protein was used alone, with routine treatment.

Later, in November, they reported a series of 1200 cases of gonorrheal urethritis, and its complications, treated with mercurochrome in combination with sugar only. Their theory is that sugar has properties similar to any foreign protein or non-specific agent. It stimulates a positive and a negative phase in the animal body to increase penetrability of tissue, increase the outpouring of amboceptors and leucocytes as well as activating the action of the dye. Adding the sugar seems to do away with all untoward effects, as anaphylaxis, so that the patients can take this combination treatment with impunity, with the exception of persons suffering from severe nephritis and cardio-vascular diseases.

The most striking results occur in acute gonorrhea and acute rheumatic conditions. In chronic conditions mercurochrome alone seems to be better. An increase of 33 per cent in cures was obtained as well as a shortening of the period required to cure the cases by two to four times. The discharge stops in one-third quicker time than when routine treatment and mercurochrome were given together. It is their opinion that the best results obtainable follow if routine treatment be given, and at 48 hour intervals, 10 c.c. of mercurochrome made up in 50 per cent glucose, is administered, until 10 to 20 doses are given.

Walther of New Orleans believes that a reaction is not necessary for good results and that the drug action is not analagous to that of a foreign protein. He uses very small doses of 2 to 5 c.c. every two to three days in connection with routine treatment and diathermy. He has obtained very good results with 768 cases which include

480 cases of gonorrheal prostatitis	64%	improved
112 cases of non-specific prostatitis	67%	"
66 cases of gonorrheal epididymitis	27%	"
86 cases of gonorrheal arthritis	31%	"
86 cases of pyelonephritis	31%	"

Johnson of Vicksburg obtained good results in 40 cases of pyelitis and in 5 cases of gonorrheal arthritis, while Lowenberg failed to get any satisfaction in 50 cases of vaginal gonorrhea in children and 1 case of arthritis of the same origin.

Young shows similar results as Walther.

Typhoid Fever.—That mercurochrome in typhoid fever and other ulcerative conditions of the intestine has no beneficial, and at times harmful effects is well shown by Bond, Barrier, Foster, Choo and Young. 22 cases were studied by these various men and they draw about the same conclusions, "that it has no place in the treatment of this condition."

Acute Infections of the Central Nervous System. — Hengstler of Minnesota attempted the use of mercurochrome in this type of disease, hoping that similar results would be obtained as in other infections. His trial gave very unsatisfactory results in epidemic encephalitis and meningitis. His opinion was the same as Ayer, Samuel Black, and Lowenberg. They all agreed that it had no value in central nervous infections.

John Vicher obtained improvement in 2 cases of encephalitis but Hengstler seems to think that these cases were not encephalitis or that the strain of organisms was different.

Malaria.—Although Aviston and Koo, in Korea, have reported 14 cases completely cured of malaria, Enbanas, in the Philippines tried the same treatment on 7 of his leper patients without a single cure. Even after two injections, the parasites were still present in the blood. He did note that the fever and chills stopped.

Dundas and Telasey confirmed this finding after treating 6 cases with mercurochrome.

Pernicious Anemia.—Believing that pernicious anemia was caused by a microorganism, McLaughlin of Siuox City, began treating this condition with mercurochrome. He believes that it results from an infection starting in the buccal cavity and that it travels down the esophagus to

the stomach. From there, the toxins find their way to the blood stream, destroying the elements of this tissue. He claims to be able to show the pathological lesions.

He presented 14 cases, most of them over two years duration, which were treated with this intravenous medication. By giving one injection of the dye in 15 to 30 c.c. doses, he claims to produce remissions more quickly and more lasting than by any other known method.

His findings have not been confirmed by any one else.

Tuberculosis.—Hayes has treated 92 cases of tuberculosis with this form of therapy. He is satisfied that it can be used to advantage in connection with other methods of treatment. He has not improved the death rate in his practice but believes that it prolongs life in terminal infections. In the late stages of tuberculosis, when properly used, it relieves the cough, promotes sleep, increases the appetite and causes an improvement in body nutrition. He does not use this therapy in cases that respond to other form of treatment, but only in those persons that have been rested over a long period of time, with no improvement, and are suffering with a severe cough and expectoration, nervousness and inability to sleep, moderate fever and poor appetite. The doses given are less than 1 mg. per kilo, every 4 to 5 days, for about 10 doses and repeating the same in about two months, if necessary. His figures are as follows:

2 early cases	Little change—well now.	
9 mod. advanced cases	5 arrested—4 much improved.	
34 far advanced cases	30 symptoms—2 no change, 2 made worse, 8 died.	
12 terminal cases	9 transient improvement, 3 harmed, 10 died.	

Total: 47 improved, 5 no change, 5 harmed, 18 died.

When rest and pneumothorax have failed, merurochrome seems at least to give relief to these unfortunates going through this stage.

Dermatology.—In 1925 Young brought out the possibility of advantageous use of intravenous mercurochrome in skin infections. At that time he presented 32 cases treated in this manner, with 24 cures, 5 improvements, and 2 failures. This report included:

8 cases of erysipelas	100%	cured.
4 cases of furunculosis	100%	cured.
16 cases of cellulitis	65%	cured.
3 cases of psoriasis	1	cured, 2 improved.

Later, in 1926, Young, Hill and Denny published the following results:

24 cases erysipelas	83.3%	cured or improved
11 cases furunculosis and carbunculosis	100.0%	cured or improved
4 cases chancroid ulceration	100.0%	cured or improved
36 cases cellulitis and abscess	83.0%	cured or improved
1 case diabetic gangrene	100.0%	cured or improved
2 cases of gas gangrene	100.0%	cured.
44 cases of leprosy	63.0%	improved. Ulcers disappeared.
4 cases of psoriasis	50.0%	cured. 1 relapsed, 1 showed no new lesion.
3 cases of pemphigus	1	cleared up but recurred, 1 improved.
1 case of eczema		Cleared up except in face.
1 case of syphilis		8 yr. old lesion cleared up.

The above results show a 50 to 100 per cent cure or improvement in all. Although obtained from a limited number of cases these figures show the possibility of further development of this therapy in dermatological diseases. The drug seems to be definitely indicated in erysipelas, furunculosis, and cellulitis.

TECHNIC.

It is now a fairly well established fact that the therapeutic effect of the drug is best obtained when an injection of from 3 to 7 mg. per kilo of body weight is administered. Above this amount it is considered dangerous and below this many believe it to be ineffective. However, Walther uses 2 to 5 mg. per kilo in the average case and Hayes uses less than 1 mg. per kilo in his tuberculosis work. When these small doses are given many more injections than usual are required.

The drug is usually administered intravenously in a 1 per cent solution of freshly distilled water, the usual amount varying from 10 to 20 c.c., depending on the size of the patient and the severity of the infection. Young advises 5 mg. per kilo which represents 22.7 c.c. for each 100 pounds of body weight.

It is customary to give one injection, repeating in four to five days, if necessary. More frequently repeated doses can be administered, as shown by Dudgeon, who has given it daily for 5 days, in large doses, without any complications. Hayes has done the same and the only reaction noticed was a slight rise in temperature. Sensitive patients, however, are often seen suffering from stomatitis, nausea and diarrhea, as a result of too frequent or too large doses.

REACTION.

Most of the men working on this subject find that a reaction is necessary for good results, or at least that their best results occurred when a definite reaction followed the administration. This reaction, especially the febrile part seems to play an important part in the elimination of the infection.

This reaction varies with the individual. In some, the average dose causes none whatsoever, and in others, as low as 3 mg. per kilo has caused a severe one. If less than a 3 mg. dose is given, usually a reaction does not follow.

After the administration, there is an immediate slight depression, a feeling of discomfort in the lower abdomen, a slight headache, followed shortly after by nausea, which may be slight or pronounced. Later a bowel movement may take place but this is very often absent. The successive doses do not produce a reaction as severe as occurs after the first injection. In febrile cases as well as in most others, there is a rise in temperature, varying from 1 to 5 degrees, which usually takes place in three to four hours. This rise is followed by a gradual drop not infrequently to normal. There is also an increase in the pulse rate.

There is often a chill which is usually light, but at times severe. Rare instances of fairly profound shock, have been reported. A few cases were so severe that restorative methods had to be resorted to. Dudgeon claims to be able to avoid shivering and true rigors, by keeping the patient warm and by giving about 10 grains of aspirin with hot tea immediately after the injection.

According to Samuel Orr Black, following the administration of mercurochrome there is an increase in the white blood cells of 7000 to 18,000. There is also an increase in the polymorphonuclear leucocytes, of 4 to 18 per cent, as well as an increase in the red blood cells of one-half to one million. The hemoglobin increases 3 to 27 per cent. This change in the blood occurs within four hours and continues through twelve hours, after which a recession sets in.

PATHOLOGY.

Considerable argument has arisen over the question of whether the dye produces any pathological change in the body or not. It is well known that it is very irritant in persons with a low tolerance to the mercurials. It is often followed by diarrhea, vomiting, salivation, and sore gums. Excessive doses will cause a stomatitis as well as a toxic nephritis. Some patients have a high tolerance to the drug or develop this tolerance, as pointed out before, where repeated daily doses were given.

Young views this toxicity with little concern. Although a transient albuminuria and casts are found, he is of the opinion that it does not cause a definite nephritis. Trout of Roanoke states that cloudy swelling of the renal and liver epithelium occurs in doses up to 9½ mg. per kilo. Others including Hagan believe that the damage to the kidneys is proportional to the dose.

One case, at autopsy, showed necrosis and degeneration of the surface of the

colon, with edema and hemorrhage exudate and extravasation deeper. The viscera showed more mercury than in bichloride poisoning. Only two fatal cases have been reported.

Therefore to say that it is safe must be modified both by any supersensitiveness of the individual to mercurials or any specific ability of the individual, to decompose the drug, liberating the mercury in a more toxic form.

ACTION OF THE DRUG.

To attribute the beneficial results of mercurochrome to its bacteriostatic activity alone is erroneous, since experimental workers have proven that in the blood stream a dilution of 1 to 600 was necessary to kill bacteria. This concentration would prove fatal, and since the average case receives a dilution of about 1 to 10,000 after it is desseminated in the blood, it must have other properties to account for its action. Further, Martin has pointed out that chemicals are thrown out of the circulation in a very short time.

It then seems that besides the bacteriostatic property it possesses, a great deal of its influence in the body depends on the ability of the dye to stimulate the tissues to respond more vigorously, in the production of more immune bodies, leucocytes, to raise the temperature and improve the general body circulation and nutrition, in this manner helping to fight off the infection.

SUMMARY AND CONCLUSION.

1. Mercurochrome is a valuable therapeutic agent in the treatment of certain diseases.

2. The best results are obtained when it is used early in the disease.

3. It is indicated in blood stream infections. It is of the greatest value when the infection is caused by Gram negative organisms, staphylococci and streptococci.

4. Mercurochrome should be tried in all systemic infections when other treatments have failed.

5. The drug is possibly indicated in pneumonia.

6. It can be used to advantage in gonorrheal infections.

7. Its value in erysipelas is fairly well established.

8. In other skin infections and tuberculosis it should be given a more detailed study.

9. It is contra-indicated in typhoid fever and other intestinal ulcerations.

10. Mercurochrome has no beneficial effects in the acute conditions of the central nervous system or in malaria.

BIBLIOGRAPHY.

1. White: Am. J. Pub. Health, 16:153, 1926.
2. Young: Arch. Surgery, 10:813-924, 1925.
3. Walther: New Orleans M. & S. J., 78:804, 1926.
4. Johnson: New Orleans M. & S. J., 78:676, 1926.
5. Stringer: New Orleans M. & S. J., 78:519, 1926.
6. Lowenburg: Arch. Pediat. 43:244, 1926.
7. Young, Hill & Denny: Arch. Dermat. & Syph., 13:465, 1926.
8. Bowman: Virginia M. Monthly, 53:207, 1926.
9. Todd: Ther. Gazette, 50:274, 1926.
10. Walker & Sweeney: J. Pharmacol. & Exper. Therap., 26:461, 1926.
11. Potter & Redwell: U. S. Nav. M. Bull., 24:279, 1926.
12. Dudgeon: Lancet, 1:169, 1926.
13. Hengstler: Minnesota Med., 9:240, 1926.
14. Hayes: J. Oklahoma M. A., 19:269, 1926.
15. McLaughlin: J. Iowa M. Soc., 16:58-59, 1926.
16. Carper: J. A. M. A., 85:256, 1926.
17. Hagan: Kentucky M. J., 24:214-19, 1926.
18. Horsley: Virginia M. Monthly, 53:146, 1926.
19. Stearn & Stearn: Am. J. Pub. Health, 16:1003-10, 1926.
20. Redewell, Potter & Garrison: J. Urol. 16:397-410, 1926.
21. Hoppe, Goldsmith & Freeman: Arch. Pediat., 43: 244, 1926.
22. Gage & Gregory: J. A. M. A. 87:848, 1926.
23. Foster & Chao: J. Lab. & Clin. Med., 2:1057-61, 1926.
24. Dudgeon: Lancet, 1:169, 1926.
25. Dundas & Telasey: J. Trop. Med., 29:009, 1926.
26. Eubanes: J. Philippine Islands M. A., 6:215-18, 1926.

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ASTHMA AND ANAPHYLAXIS.

The close parallelism between the manifestations of anaphylactic shock and those of asthma have been responsible in part for the general conception that asthma etiologically is entirely due to protein sensitization. In addition to the clinical similarity of the condition as seen in man and as seen in experimental animal, other factors are responsible for the idea that the two conditions are one and the same. In both conditions sensitization may be either hereditary or acquired. Anaphylaxis is specific as is asthma. An animal sensitized to one protein can be only affected by that protein in asthma and in anaphylaxis; and atropin will relieve both conditions. Another feature which is similar between anaphylaxis and the diseases, which we are accustomed to call the protein diseases, asthma, hay fever, urticaria, is that all show in a stained smear of the blood a marked eosinophilia. This eosinophilia is also seen in sections of the lungs of animals killed by protein, and in Arthur's skin phenomena the swelling is made up largely of eosinophils. With all this data it is not to be wondered at that asthma and similar evidence of protein intoxication were considered to be anaphylactic in origin. The question has not been generally debated. Now Kahn* presents considerable evidence to show that these so-called anaphylactic conditions are proving not primarily anaphylactic. He shows that the demonstration of antibodies to rag weed is extremely variable, whereas in true anaphylaxis this is one of the most striking phenomena of the condition. Kahn brings forth considerable additional evidence of experimental nature, but his thesis is upheld mainly by the result of failure of treatment of individuals who have suffered from asthma. He expresses not only his own ideas, but also those of a large number of individuals who have been interested in the treatment of the protein disorders. His disputation is well presented, and his arguments are well upheld.

Apparently the genus of bronchial anaphylaxis lies in the phenomena of heredity. Protein sensitization is a phenomenon of the disease asthma, but it is not the basic and underlying cause of the disorder. Immunization is almost impossible to obtain a cure. In the study of the genesis of disease, many theories and ideas are advanced which in the course of time are materially altered. It would seem that our idea of the etiology of asthma, an idea which has held sway for the last fifteen years, would need to be revised.

THE WALTER REED MEMORIAL.

The Virginia State Chamber of Commerce announces that work has been started on the rebuilding of Belroi, the birthplace of Dr. Walter Reed, as a

*Kahn, Morris H.: Arch. Int. Med. 39:621, 1927.

Birthplace of Walter Reed.

national memorial to that conqueror of yellow fever. This project has been conducted by the Virginia Medical Society and certainly the effort is most praiseworthy.

All of us know the story of Reed's work with yellow fever in Cuba, and of his heroic assistants, Carroll, Lazear and Agramonte. The four names are linked inseparably in this great achievement of preventive medicine. Their work established the mosquito as the intermediate host, and rational prevention was therefore possible, wiping out the plague of tropical and semi-tropical countries.

We in New Orleans are especially interested and extremely grateful. The progress of our city and state to their present status would have been impossible under the handicaps of yellow fever epidemics. New Orleans suffered greatly from the ravages of this disease. To Dr. Reed we also owe the greater part of our knowledge as to the prevention of typhoid fever.

For the past several years, a committee of the Louisiana State Medical Society has been actively engaged in the work of planning a memorial in Louisiana to Dr. Reed, one of our state's greatest benefactors. Considerable progress has been made and we hope that in the very near future the committee will be able actually to begin work on our memorial to this international figure.

While we pay homage to this scientist, let us not forget the many associates who made his great work possible. Unsung heroes, volunteers to a cause which has benefitted humanity inestimably! We are too apt to forget such obscure, unknown helpers, men who allowed themselves to be bitten by the infected mosquitoes to prove Dr. Reed's theory. Dr. Lazear died following his second voluntary exposure, and four of twenty-five volunteers likewise gave their lives to the cause. Of these four, one was a doctor, one a nurse, and two were Spaniards. Still another physician volunteer was disabled completely and a soldier volunteer was left a helpless paralytic. All honor to those who offered their lives for this experiment.

Another contemplated tribute to Dr. Walter Reed, "Father of Modern Public Health," is the establishment of a research chair at the University of Virginia Medical School.

THE DEPARTMENT OF SURGERY.

Keeping apace with the modern trend of medical education, Tulane University has recently been planning to establish its Department of Surgery more nearly on a full-time basis. Following the resignation of our eminent and beloved Professor Matas last year, a new appointment was necessary, and with the aid of an annual appropriation from the General Education Board of the Rockefeller Foundation, the first steps in such a plan were made possible.

After the most painstaking, careful consideration of possible suitable men for such a position, the Board of Administrators of the Tulane Educational Fund announced the appointment of Dr. Edward William Alton Ochsner as Professor of Surgery and Head of the Department of Surgery. Dr. Ochsner begins his duties with the opening of the coming school year. At present, the doctor is in the city, actively engaged in organizing and planning his work.

Dr. Ochsner is a native of South Dakota. He was graduated from the University of South Dakota with the degree of Bachelor of Arts, and from the Washington University Medical School, St. Louis, with the degree of Doctor of Medicine. He then served an interneship and an assistant residency in the Barnes Hospital, St. Louis, under Dr. George Dock. He also served a surgical internship in Augustana Hospital, in Chicago, under the late Dr. A. J. Ochsner.

Dr. Ochsner has also had surgical training in Europe. He served as surgical assistant under Professor Clairmont in the University of Zurich, Switzerland; and under Professor Schmieden, in the University of Frankfurt, Germany. He has, in addition, visited most of the prominent surgical clinics of Europe.

Following his training in Europe, Dr. Ochsner served as an instructor in surgery and surgical pathology in Northwestern University, during which time he was engaged in surgical practice in Chicago. He then became Assistant Professor of Surgery in the University of Wisconsin Medical School. It is from this professorship that Dr. Ochsner comes to Tulane.

In Dr. Ochsner we feel certain that Tulane University has a man who will do everything possible to further the ever increasing prestige of our great medical school. The Professorship of Surgery is one of the most important positions Tulane can offer. Professor Matas has given to it an international reputation. Dr. Ochsner has already shown his interest in educational and research problems, and we hope that his endeavors will bring progress and added honor to Tulane and to New Orleans as a medical center.

Dr. Ochsner will be fortunate in having a co-worker of known ability and worth. Dr. I. M. Gage, of Tulane, has been appointed full-time Assistant Professor of Surgery, and begins his duties with Dr. Ochsner. Dr. Gage is well known to us all. A graduate of Tulane, he has for the past several years been actively engaged in the teaching duties of the Department of Surgery under Dr. Matas.

We welcome Dr. Ochsner and extend our very best wishes for his continued success. We congratulate Dr. Gage and feel ourselves fortunate to be able to have him continue his capable work.

CORRESPONDENCE.

Amsterdam, Aug. 2, 1927.

The Editors of the New Orleans Medical and Surgical Journal.

Dear Sirs:

It may be of interest to record a few observations made in the course of visits to several of the large London Hospitals and the big hospital of the city of Amsterdam. Such notes as I have made must be considered the result of superficial study, rather than the fruit of extended and deep delving into the subject.

In London I had the opportunity of seeing three of the well known medical institutions—St. Thomas Hospital, St. Bartholomew, and the University College Medical School. At all these hospitals, teaching is conducted. In fact, in London teaching of the undergraduate student is carried on in practically every hospital of any size. In most of them, it is only the last two, or clinical years that are given; in others, and these represent the best, a man may enter and complete his entire medical curriculum under the same roof. Many of the students prefer to take their first two years of training at Oxford or Cambridge and complete their courses where there is an abundance of clinical material. As a result of this, the preclinical classes are materially smaller than the clinical. I will not give a detailed discussion of medical education in London, but I would like to make mention of the remarkable freedom of thought and action allowed the medical student. He is assigned service in one or the other branches of medicine. He completes his time there and moves on to the next, depending on where there is a vacancy. His work is checked up to a certain extent, but unless he completely neglects his more or less perfunctory duties, nothing is said to him and he is allowed to go on as he wills. Final examinations, failure to pass, and flunks are unknown. If he gives his time, that is all that is required of him. As a consequence, when he has completed his requisite hours in the maternity, surgical, medical and specialty wards, he is considered eligible to go up for his licensing examinations. He may or

may not pass these. This seems to be immaterial to the medical school. He can appear before the licensing board as often as he wants. If he fails the first time, he can appear again and again until he passes or gives it up as a bad job. He never has to repeat his systematic training in the wards, but of course it is presumed that he does considerable studying between the examinations. As an exaample of this manner of treating the doctor in embryo, Dr. T. R. Elliott, Professor of Medicine at the University College Medical School, showed me the record of a man who took the board examinations regularly for four years before finally receiving his license.

One is struck, upon entering the wards of the London hospitals, with two impressions: their roominess and their brightness. The beds are not crowded together and there is an attempt to overcome the accustomed meteorological dullness of London by using bright colors. The ward screens are often a brilliant red, bright curtains are at the windows, the blankets are colored, and flowers are often to be found in windows, on mantles and desks, giving an air of cheerfulness to the whole surroundings that the bleak, hygienic wards of our American hospitals frequently lack. Certainly the ill man is more likely to recover in such surroundings than he is in our drab ward interiors. Upon closer observation, it is found that the general ward arrangements are not particularly convenient, but despite this, room always seems to be found for a small, readily accessible laboratory where the minor laboratory examinations, such as urine analysis and blood counts, can be made promptly and with a minimum amount of trouble. The ward histories are complete and well worked up. In fact, there is noted in Europe a punctilious attention to the recording of observations when made, which enhances the value of records immeasurably.

The most vivid medical impression I received was the time and attention the medical man gave to his wards and out-patient departments. I was struck, also, by the enthusiasm for a form of treatment which has been in use in this country with more or less favor for some years, but which is apparently a relatively recent innovation in London: namely, the alkalinization treatment of gastric ulcer. This disorder is particularly rife in England, whether on account of the wretched oral hygiene of the lower classes or not, is immaterial. The fact remains that they see there many cases. In one hospital I was told that in a period of eighteen months not a case of gastric ulcer had been turned over to the surgeon, whereas previous to the use of the Sippey treatment, daily gastric operations were the rule.

In the large Binnengasthuis of Amsterdam, there is conducted one of the best of the Holland medical schools. As in London in the clinical years, the students act as the clerks of the ward. They take histories, make examinations of all kinds and record them. A student does not have his work laid out for him with the same exactitude that is common in the United States. When he enters his clinical years, he has to take whatever service upon which a vacancy exists. As example, one and a half months of service are required in the neurological wards, where eight men are accommodated. If the eight places are filled, he has to wait until one of the men already assigned there has finished his time. The man finishing his service may have to wait a varying time until he can get into, say the medical or surgical departments. As a result of this plan of procedure, the teaching of a necessity, continues steadily throughout the year, but the student, on account of the waiting to get into certain services, requires about two years to complete sixteen months' actual work. He does not have any regularly assigned holiday and practically has to be subject to call, though not working, all the time for the two years of clinical training.

The wards of the City Hospital of Amsterdam are reasonably bright, but spotlessly clean. The cleanliness of Holland is a bye-word, and a myth, but not so in the hospital. The patients are kept immaculately clean; the wards themselves are remarkably free from odor, dust and dirt. The neurologic wards exemplify the general splendid care for the patient. In such wards, with many of the patients incontinent, one would expect to find at times beds soiled with urine or feces, but such is not the case. By means of various ingenious contraptions the patient is kept from soiling himself, and if he does, is promptly changed. Freedom from bed sores is one of the results. I saw a patient in bed for twenty-one years, incontinent for the last ten, who had never had even a transient irritation erythemia of the dependent parts.

I would like to continue more or less in detail, but I fear a more minute account would be of little general interest and, aside from that, this note is intended for only a brief communication.

The death of Magnus, the great pharmacologist of Utrecht, has caused great sorrow in Holland. He was a man universally liked and admired. Next spring a trip to America had been laid out for him which was to cover most of the country. Magnus was to have delivered the Herter Lectures in Baltimore and the Lane Lectures at Stanford University, California, besides lectures at the University of Chicago, the Mayo Clinic and several other places. Unofficial correspondence had

held out the hope that he might visit New Orleans and there deliver a talk or lecture.

The chief medical clinic of Amsterdam is in charge of Dr. Snapper, who will visit America in a few weeks to give an address at Kansas City later in the fall. The Head of the Department of Neurology was in the United States last spring, delivering a Harvey Lecture in New York. The chair of Neurology at Johns Hopkins was tendered him, but he refused, probably due to the fact that a magnificent new neurological institute which will be opened next year, will be in his hands.

The medical service, aside from the surroundings and national differences, is run essentially the same as the Charity Hospital services. It was interesting to observe that the patient who had malaria was receiving the "Standard Treatment," well known in the South; that mercurochrome had been used, and was largely being abandoned on account of severe reactions and invariably diarrhea; that rheumatic fever was common and that subcutaneous nodes were the rule in children and young adults; that aneurysms were rare, one being shown as a great curiosity; that in typhoid fever the absence of eosinophiles in the differential count is considered an important diagnostic finding, and that frequently the weaker dilutions would be positive when the stronger were negative in the Widal reaction; and that in the pediatric ward, despite three weeks' quarantine and the isolation of the little patients in glass cubicles during their entire stay in the hospital, mumps, chicken-pox and German measles occurred quite frequently.

Dr. Snapper is also the director of a large research laboratory where he is concluding perfusion experiments which show the ketone bodies may be destroyed in the kidney alone without the action of the liver, lactic acid being formed. The ketones are fat derivatives, lactic acid a carbohydrate precursor; the first experimental proof that carbohydrates may be formed from fats.

Very sincerely,

J. H. MUSSER, M. D.

DEMONSTRATIONS IN MALARIA CONTROL.

After satisfactory demonstrations that malaria could be controlled successfully and economically in areas of dense population and high per capita income, the Board withdrew from this activity and attacked the much more difficult problem of malaria control in rural areas where the population is sparse and the per capita income low. General mosquito control is not feasible under these conditions, nor did it even seem possible in many areas to control Anopheles. Further studies have indicated, however, that only one of three common Anopheles of the United States, namely, *Anopheles quadrimaculatus*, is responsible for the transmission of malaria. Since the seasonal prevalence of this mosquito is known and also the preferential breeding-places, it is quite possible to concentrate on the destruction of this one species and to ignore all others, thus securing control of malaria at a reasonable cost even in sparsely settled areas.

It is obvious that malaria control in rural areas will not be so rapid, so spectacular, or so complete as was the case in the demonstrations in municipal malaria control. The program can best be carried forward in counties having a full-time health service which is conducting all phases of health work and featuring malaria control only in those areas where it is of real economic importance. During 1926 the Board formulated a tentative plan of malaria control on the basis of the county as the unit. This program, which is a compilation of the experiences of successful malariologists and of public health administrators versed in malaria control measures, is being tried out in various parts of the Southern States. In the course of the year the Board aided malaria control in the Southern States through contributions to the central health bureaus of seven states where malaria is a problem, and also assistance to twenty-six county health unit budgets. The method of procedure is one of gradual attrition rather than of mass frontal attack; but it is believed that the strategy is sound and, if continued systematically and persistently, is sure to result in a definite reduction in malaria in the rural districts.

The year's malaria program included also cooperation in control demonstrations in Porto Rico; in the province of Tucuman, Argentina; in the state of Rio de Janeiro, Brazil; in Italy; in the province of Caceres in Spain; in Palestine; and in the Philippine Islands.

LOUISIANA STATE MEDICAL SOCIETY NEWS

H. Theodore Simon, M. D., Associate Editor.

PROCEEDINGS OF THE TOURO STAFF MEETING.

On May 4, 1927, at the regular clinical meeting of the Touro Infirmary Staff, the entire program was furnished by members of the Resident Interne Staff. Several interesting cases were presented, and the visiting staff entered actively into the discussion. The cases presented were as follows:

"Cases with Leukemoid Blood Pictures," by Drs. H. L. Weinberger and John Archinard. Under this title two very interesting cases which had been under their observation were presented, followed by several cases from the literature.

"Mastoiditis with Lateral Sinus Thrombosis," by Dr. A. J. McComisky. Dr. McComiskey reported such a case in a child nine years of age, with a hemolytic streptococcal septicemia. A discussion of the diagnosis and treatment followed.

A "Case of Glycosuria," by Dr. C. T. Williams. A glycosuria in a child three and one-half years of age was presented. The interesting point was the fact that the glycosuria disappeared following anti-luetic treatment.

"Essential Thromcytopenia Purpura," by Dr. Bernard Efron. A report of two cases, with a discussion as to classification, diagnosis and treatment.

"Toxemia of Pregnancy," by Dr. H. L. Cohen. A case of nephritic toxemia, discussed from the point of prognosis and therapy.

All the cases were carefully prepared and presented and the Infirmary is to be congratulated upon this successful innovation in Clinical Staff Meetings.

VERNON PARISH FAIR ASSOCIATION.

A medical gathering was held in Leesville last evening, the greatest body of medical men ever assmbled in Leesville.

There were a number of visiting doctors from Alexandria, DeRidder, Merryville, Gandy, Fisher and Many, and most of the Vernon Parish physicians.

A new society was organized under the name of Sabine, Vernon and Beauregard Tri-Parish Medical Society. Dr. W. P. Perkins of Gandy was elected President, Dr. Thos. R. Sarter of DeRidder Vice-President, and Dr. D. O. Willis of Leesville, Secretary-Treasurer.

A very instructive and much enjoyed scientific program was rendered.

Dr. W. P. Perkins called meeting to order and made a talk on the objects and purposes of this meeting, the principal object as expressed to build up better and closer feeling among the profession and to improve their knowledge and ability to treat and handle the sick and afflicted.

Address of welcome to the gathering on behalf of the local profession, by Dr. D. O. Willis.

Then one of Mr. Dunlap's sumptuous Hotel Leesville dinners was enjoyed.

The gathering then went to the Dreamland Theatre where Dr. Wilson with Parke-Davis & Company had arranged to have two very interesting and instructive reels showing the different processes in the manufacture and administration of the various biologic products.

The gathering then re-assembled in the dining room of Hotel Leesville, where the scientific program was rendered.

Dr. A. S. Reisor of Leesville talked on the subject of digestive and intestinal disturbances of children.

Dr. H. M. Foster of Alexandria talked on the subject of drainage of the upper urinary tract, exhibiting many roentgen ray photographs to demonstrate his explanation.

Dr. E. R. Gandy of Alexandria read an excellent paper on the diagnosis and management of superficial eye troubles.

The secretaries of the three societies were made the Board of Directors and it was left with them to fix the time and place for the meeting, with the understanding that meetings would be mobile, different places each meeting.

D. O. WILLIS, M. D., Sec.-Treas.

Any member of the Orleans Parish Medical Society moving his office on or about October 1st will kindly communicate with Secretary, 1551 Canal Street.

Dr. C. A. Weiss has been made Chairman of the Committee on Arrangements for the next meeting of the State Medical Society in Baton Rouge. Active plans are being made for a most successful meeting.

WINDOW VENTILATION VERSUS FAN VENTILATION.

A previous study of the New York Commission on Ventilation which recommended the window system of ventilation rather than the newer fan system required by some of the State laws has caused considerable controversy between hygienic authorities and ventilating engineers. As a result, the commission is conducting special studies in Syracuse and in Cattaraugus County, N. Y., in connection with the urban and rural health demonstrations which the Milbank Memorial Fund is aiding. It is hoped that this investigation will help to determine the relation between the system of ventilation used and the health of school children.

NATIONAL WAR ON RATS SHOWING RESULTS.

Rats are probably decreasing in numbers in the United States, says the United States Department of Agriculture, although their decrease is only beginning to be apparent. The chief factors responsible for any decrease are present-day sanitary requirements and modern buildings, which make it increasingly difficult for rats to find food and shelter; a national urge against all unnecessary waste; and a better understanding generally of the relation of rats to human economy.

Furthermore, as facts relating to the spread of communicable disease have become better known, more general interest in rat control has been stimulated, more effective means of destoying rats have been developed, and information regarding these methods have been widely distributed. Farmers' Bulletin 1533-F, "Rat Control," prepared by James Silvert of the Biological Survey, and just issued by the department, contains many suggestions for the control of rats on the farm and in the city.

Permanent exclusion of rats may be brought about by rat-proofing buildings and other structures commonly inhabited by the rodents; by removing any possible shelter; and by cutting off their food supply. Details on methods of accomplishing these objective are discussed in the bulletin, as well as such control methods as poisoning, fumigating, trapping, and use of deterrents.

Although getting rid of rats is largely an individual problem, rat infestation has a serious effect on the whole community, and organized control effort is highly desirable. A person who allows rats to increase on his property until they menace the entire neighborhood becomes an object of public concern, and a city that permits its refuse dump to serve as a breeding place for hordes of these pests is committing a grave injustice to its population. Ridding a whole community of rats can best be accomplished by organized efforts of all the citizens. The department will gladly assist such organization through the Biological Survey in planning, organizing, and prosecuting anti-rat campaigns by furnishing preliminary plans, general instructions, sample copies of posters, and other publicity material and, where possible, the personal services of a leader.

A copy of the bulletin may be obtained by writing to the United States Depaartment of Agriculture, Washington, D. C.

NOTICE OF EXAMINATION FOR ENTRANCE INTO THE REGULAR CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE.

Examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held at the following named places on the dates specified:

At Washington, D. C. ..... Nov. 7, 1927
At Chicago, Ill. ..... Nov. 7, 1927
At New Orleans, La. ..... Nov. 7, 1927
At San Francisco, Cal. ..... Nov. 7, 1927

Candidates must be not less than twenty-three nor more than thirty-two years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written, and clinical tests before a board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

H. S. CUMMING,
Surgeon General.

PRODUCTION OF CLEAN MILK REQUIRES ATTENTION TO SANITATION.

The need for using improved methods in producing the public milk supply becomes more and more pronounced as time goes on, says R. J. Posson, associate market milk specialist of the United States Department of Agriculture. As cities grow larger or become more numerous the milk supply must necessarily be transported from greater distances and handled in larger quantities. To withstand such treatment it must be produced under the most sanitary conditions.

Furthermore, says Mr. Posson, there is an increasing demand for clean milk on the part of the consumer, and health officials are requiring that improved sanitary methods be used in its production. Unless care is taken in producing it, therefore, great losses may result from the rejection of milk by dealers or health departments and from the lessened demand for low-grade milk. The responsibility for clean milk at the source is placed squarely on the shoulder of the milk producer.

By observing certain precautions clean milk can be produced with very little more effort than milk which is not clean. These precautions are discussed by Mr. Posson in Leaflet No. 3, Improved Sanitation in Milk Production, just issued by the department. The first requirement for clean milk is a herd of healthy cows. Once it is determined by test that the cows are free from tuberculosis and are otherwise healthy, pains should be taken to clean them thoroughly before they are milked. Wiping the udders with a damp cloth removes the danger of contaminating the milk by falling hair and dust particles. Since bacteria cause milk to sour they should be kept out of it by every possible means.

Further precautions in the production of clean milk require that only healthy people be employed in a dairy, that they wear clean clothing, and that milking be performed with clean, dry hands. The use of small-top pails is recommended as a means of reducing the amount of impurities that fall into the milk.

Every dairyman should be certain that he has a pure, safe water supply. Wells should be located on the highest available ground. A separate dairy house or milk room should be provided. Milk to be sold should never be handled in a dwelling as there is too much chance of dangerous contamination in case sickness occurs in the family.

Milk utensils which are not properly washed or sterilized may be the greatest source of contamination. They should be rinsed inside and outside with lukewarm or cold water as soon as possible after use, then placed in a wash vat, scrubbed with a brush in warm water containing a soda ash or alkaline washing powder (not soap), rinsed, placed in a sterilizing cabinet, and thoroughly steamed.

The best way to prevent multiplication of bacteria which unavoidably get into the milk is to cool the milk as soon as possible after it is produced and keep it cold. Bacteria are tiny single-celled plants, which, like most other plants, require warmth to grow. If milk is cooled to 50 degrees F. or below, and held at that temperature, bacterial development is very much retarded. Milk should not only be kept cold until it leaves the farm, but should also be protected from the sun and warm air while being transported from farm to city.

A copy of the Leaflet may be secured by writing to the United States Department of Agriculture, Washington, D. C.

PHYSICIAN WANTED AT ONCE.

High class physician is desired in a thriving community, 2500 population in rich oil section. Apply for information to the New Orleans Medical and Surgical Journal.

Dr. A. A. Herold, president of Louisiana State Medical Society, has announced, through letters to his executive committee, his intention of appointing the state-wide committee on *Publicity*, at an early date, and issuing a call for a meeting, to outline the program. This is in conformity with the wishes of the conference held in New Orleans, July 25th, called and presided over by Chairman B. A. Ledbetter of Committee on Public Policy and Legislation.

The Shreveport Medical Society held its annual social session at the Spence Flournoy Place, near Shreveport, on the evening of August 2d. A chicken barbecue supper was served to the eighty-five present, after which several talks in lighter vein were made—mostly foolish, some otherwise. Among guests for the occasion were the interns of the various hospitals, Dr. O. O. Hamner of Arcadia, Dr. C. O. Wolff of Haynesville and Dr. J. B. Benton of Minden.

There is much of interest in forthcoming medical society meetings. The Southern Medical will convene in Memphis on November 14th. The Radiological Society and the American College of Physicians are scheduled for New Orleans during the next few months.

Shreveport friends of Dr. Marion Souchon were happy to greet him on July 27th, when he visited that city, for the purpose of attending the agency meeting and banquet of the North Louisiana Agency (Homer S. Smith Ins. Agency) of the Pan-American Life Insurance Co., of which Dr. Souchon is medical director.

Died: James Asbury Sewell, Boyce, Louisiana; Medical Department of the Tulane University of Louisiana, New Orleans, 1905; aged 43; died in July at a hospital in Hot Springs National Park, Arkansas, of acute encephalitis.

MISSISSIPPI STATE MEDICAL ASSOCIATION NEWS

J. S. Ullman, M. D., Associate Editor.

The reports of officers for 1926-27 at the June meeting of the Woman's Auxiliary of the Harrison-Stone Counties Medical Society showed an excellent year's work by this group of physicians' wives.

This auxiliary was organized by Mrs. D. J. Williams three years ago and has a present membership of twenty-six, two of whom are women physicians.

At the beginning of the year, this organization set as its objective three lines of work as follows: (1) to try to place the magazine, Hygeia, in each of the public schools of Harrison and Stone counties; (2) to devote more time to the social needs of the nurses in training in the local hospitals; (3) to foster more friendly relations among the families of physicians, with special regard to newcomers. These plans have been carried through satisfactorily. To this regular work the auxiliary has added a record of Flood Relief work of which they are justly proud.

When the call for infants' clothes for flood refugees was sent out by the State president early in May, the Coast organization lost no time in answering the call. Dr. Emma Gay, president of the local auxiliary, appointed Mrs. D. J. Williams and Dr. Margaret Caraway, joint chairmen, and in two days the auxiliary began to ship boxes of baby clothes and other necessities continuing until early in June. The Woman's Club gave the use of their club house for the work, the Singer Sewing Machine Company installed motor driven machines, the daily papers gave unlimited publicity, the merchants donated or made special prices on materials, and the women of the town assisted the auxiliary members in the work of sewing and packing. The end of this month of strenuous work saw over thirty boxes sent to the various refugee camp chairmen of the Medical Auxiliary. In all there were sent from this auxiliary about 5,500 garments, including infants', childrens', and women's clothing, also sheets, pillow cases, and hospital supplies. Besides these boxes sent from Gulfport, there was much work done by the members of the auxiliary in Biloxi through other organizations.

The officers of the Harrison-Stone Counties Auxiliary are: President, Mrs. J. A. McDevitt; First Vice-President, Mrs. C. A. McWilliams; Second Vice-President, Mrs. J. T. Weeks; Secretary, Dr. Margaret Caraway; Corresponding Secretary, Mrs. D. G. Mohler; Treasurer, Mrs. D. J. Williams.

Friends of Dr. Culley, Jackson, are glad to hear that he is convalescent and will soon be out again. Dr. Culley is the nestor of the fraternity at Jackson and is highly respected and beloved by his confreres.

The next meeting of the Central Medical Society will be in charge of the Rankin County doctors, who will have charge of the program and entertaining.

Dr. H. R. Shands has gone to Colorado Springs for his vacation. Dr. Frank Hederman is looking after his practice during his absence.

Dr. Jones, Secretary of the Council, requests the editor again to call attention to the necessity of having requests for defense by the Council, to be made in due form according to the By-laws. Many requests for defense had to be turned down last year because the correct form was not followed. Several doctors filed their requests for defense after the cases were disposed of, and many others after the arrangements for attorney's fees had already been completed. The Council must be consulted in advance of other arrangements if it is to take part in the defense of any suit.

It is rumored that a Sanatorium-Hotel is soon to be erected at Stafford Springs and that a full consulting staff of physicians is to be maintained.

The following announcements regarding staff appointments in the Gamble-Montgomery Clinic in Greenville, Mississippi, were recently made: Dr. John Lucas is in charge of the section on Obstetrics and Dr. R. E. Wilson is chief of the Section on Pediatrics, succeeding Dr. G. H. Spivey, recently resigned.

The Jackson County Medical Society had a very enthusiastic meeting on June 6th. The Society has been having good meetings for several months. At this meeting Dr. Oswald of Mobile read a good paper on "Sacral Anesthesia in Operations in the Pelvis." Dr. Bell, also of Mobile, made a very practical talk on "Intestinal Diseases of Infants and Infant Feeding."

At the May meeting Dr. Babendreer read a most interesting and timely paper entitled: "Concerning the Cause of Our Present Professional Ills."

At the August meeting Dr. Weldon of Mobile read a paper on "Toxemia of Pregnancy." Dr. Bethea of Memphis made an interesting talk on

the subject of "X-raying the Thymus of New Born Infants."

At the regular monthly meeting of the Issaquena-Sharkey-Warren Medical Society held in Vicksburg, August 9th, a paper on "Dental Focal Infection" was presented by Dr. A. G. Tillman, Jr., D. D. S., a paper by Dr. S. W. Johnson and the discussion of Medical Ethics was continued under the leadership of Dr. E. F. Howard.

President Darrington attended the last meeting of the Central Medical Society and addressed that body pleading for a united profession with every man working for the good of Mississippi, support for our health departments, and the welfare of all our institutions. He urged that everyone adhere to the high standard of medical ethics, to aid in every educational campaign and help protect people from charlatans in and out of the cults.

The Children's Summer Health Camp, sponsored by Mrs. Rober Phifer of Jackson, Executive Secretary of the Mississippi Tuberculosis Association, and maintained either through the amount derived through the sale of the Christmas seals or through private donation, is just starting the second month of camp life at Sanatorium, Mississippi. One of the convalescent wards has been given over for the use of the little guests. Small white beds, little desks and other things for the convenience of the children as well as to assist them in learning lessons in tidiness have been installed. A plentiful group of children's books are in easy reach in the attractive recreation room, situated with the matron's office and medicine room just between the porches for the boys and girls. The matron, Mrs. Bouchillon, "Mother Bush" to all the camp kiddies, has been a very wise selection. She is beloved by all the children and yet all respect her authority and are willing to accept her guidance and follow the routine as directed by her and the Director of Games, Miss Sallie Massey of Meridian. Miss McQueen of the Oral Hygiene Department of the state has rendered valuable aid in teaching the children correct care of their teeth as well as careful cleaning and going over the teeth of every child for possible defect. The "Tooth Brush Drill" is an important part of each day's routine.

A swimming pool has been constructed on the Sanatorium grounds and a swimming instructor is in charge of the children for certain hours each day. Almost every child has learned to swim and every child without exception shows a gain bodily and mentally. The average gain in weight for each child has been a little under three pounds even though the real emphasis has been on the strengthening of flabby muscles, developing of little chests, inculcating of right ideas of living and building up a resistance to disease rather than a mere "fattening" process.

Fourteen of the children were retained for a second month at the camp. These are children who either are in contact cases or those who have not made satisfactory gain during the short four weeks of the first month of the Health Camp. Nine other children have been added to this group for the last four weeks of the camp.

That there are literally thousands of children in Mississippi who need the supervision afforded by the Summer Health Camp is self evident when we consider the more than 1,850 deaths from tuberculosis in this state for 1926. We can easily state that for each death there were eight to ten cases of tuberculosis in the state. Each of those 14,864 cases (the lowest possible estimate of cases) was in intimate contact with at least two children. As each child who lives in close association with a case of tuberculosis is apt to receive a heavy infection from that source, we can readily see that each of these children is a potential case of tuberculosis. The need in Mississippi for much greater Summer Health Camp facilities is most apparent. Or better yet, this problem may be handled by adequate Preventorium facilities along with a satisfactory education of the masses who make up the state and especially the great group of Mississippi School Children.

Dr. and Mrs. E. D. Kemp of the Mississippi State Sanatorium have just returned from several days spent in motoring to the homes of relatives.

Dr. Henry Boswell spent a few days fishing at Four Prong Lake and thereby obtained a few days of much needed rest.

Dr. and Mrs. W. A. Toomer motored to points in North Mississippi for a two weeks vacation.

Mrs. Minnie Phelps, primary teacher at the Blind Institute, was a visitor at the Children's Health Camp and while there told the children a number of well selected stories.

Dr. Henry Boswell gave the children of the Health Camp some very instructive talks on "How to Keep Well."

RESOLUTIONS.

Whereas Almighty God has seen fit to remove from our midst Dr. J. C. Jones, our beloved President, and

Whereas Dr. Jones has at all times shown himself to be a man of high professional attain-

ments whose ethical standards were noteworthy and worth of example, and

Whereas he has always exhibited those traits of character which stamp him as a loyal, patriotic, and unselfish citizen, and

Whereas our hearts go out in love and sympathy to the bereaved family,

Be it resolved:

1. That the Harrison-Stone Medical Society and the medical profession have in the death of Dr. Jones sustained an irreparable loss.

2. That the City of Gulfport and the State of Mississippi have lost one of their most useful and valuable citizens.

3. That a copy of these resolutions be placed on the minutes of this Medical Society, that a copy be sent to the family, and that a copy be given to the local press.

(Signed) ISHAM KIMBELL, M. D.
E. H. LINFIELD, M. D.
E. P. O'DENEAL, M. D.

PELLAGRA AND VITAMINS.

Two very timely letters which are self-explanatory have been sent out by the State Board of Health:

Dear Doctor:

I am enclosing copy of letter received from the President of the Vitamin Food Company, Inc. These people have a number of breweries in England and they import large quantities of brewer's yeast from England to this country. Dried brewer's yeast is a food and not a medicine and there is no reason why grocery stores should not stock up with this yeast the same as they would Fleischmann's yeast cakes. It is not necessary to refrigerate the dried yeast as is the case with the yeast cake.

I am informed that in some cases people are paying as much as $2.00 and even $3.00 per pound for dried yeast. It may be purchased on the basis of the price mentioned in the letter to Mr. Schafer.

Dr. Goldberger, of the United States Public Health Service, strongly advises the use of dried yeast—an ounce a day for adults; children in proportion. It can be taken in water or milk—the ounce being divided into three or four doses for the day. Doctor Goldberger also advises that families have a can of yeast on the table along with the sugar bowl. Children can take it as a confection or candy by mixing it with molasses or syrup. Doctors Goldberger and Wheeler feel sure that dried yeast contains the anti-pellagra vitamin and is not only a curative agent, but is also very useful in the prevention of pellagra.

Mr. A. L. Schafer, director of the Red Cross work for Mississippi, has agreed that the American Red Cross will furnish dried yeast, tomatoes, milk and other foods that are deemed important in the treatment of pellagra, to Red Cross charges; that is, indigent cases, in the flood areas. It will be necessary to take this up with your local Red Cross Committee.

Mr. Schafer has written to the chairmen of Red Cross organizations of all of the flooded counties authorizing the purchase of certain necessary above named supplies for indigent pellagra patients.

With best wishes, I am,

Very truly yours,

(Signed) FELIX J. UNDERWOOD,
State Health Officer.

Dear Mr. Schafer:

We have an order for 200 pounds of our dried yeast from Miss Lucy Richards at Dyersburg, Tenn., also orders from several of the public health officials of North Carolina. This product is selected from barley grain brewers' yeast with nothing added or subtracted, and is very high in B. Vitamins as well as in the salts which the yeast gathers from grain. Miss Hart had a recommendation from Dr. Goldberger.

We are supplying this to you at 25 cents a pound, f. o. b. our plant, but we could supply in larger lots if we know approximately the definite quantity needed at a cheaper price, dealing entirely through the Red Cross and Public Health Agencies.

This dried yeast is constantly tested for vitamin and strength, and will retain its potency in warm climates. A ton lot can be divided into a number of packages, and the saving to you would be substantial.

The writer is a Southerner, and was for 16 years food commissioner of Kentucky, and is keenly interested in the work which the Red Cross is doing to bring an end to pellagra in our Southern States.

Very truly yours,

VITAMIN FOOD COMPANY,
P. M. ALLEN, *President.*

The President of the Mississippi State Medical Association announces the following standing Committees:

Budget and Finance—G. E. Adkins, Jackson; W. L. Little, Wesson; E. F. Howard, Vicksburg.

Public Policy and Legislation—Willis Walley, Jackson; F. J. Underwood, Jackson; I. W. Cooper, Meridian.

Medical Education—P. W. Howland, Oxford; G. S. Bryan, Amory; S. W. Johnston, Vicksburg.

Teachers' Association—H. H. Ramsay, Ellisville; H. F. Garrison, Jackson; N. C. Womack, Jackson.

Publication—J. S. Ullman, Natchez; J. W. Gray, Clarksdale; T. M. Dye, Clarksdale.

Necrology—W. A. Dearman, Gulfport; C. D. Mitchell, Fondren; H. S. Gulley, Meridian.

Hospitals—W. H. Anderson, Booneville; H. A. Gamble, Greenville; J. E. Green, Richton.

Chairmen of the various sections are:

Surgery—J. W. Barksdale, Jackson.

Medicine—W. H. Frizell, Brookhaven.

Hygiene—C. M. Shipp, Bay St. Louis.

Eye, Ear, Nose & Throat—G. E. Adkins, Jackson.

J. M. BUCHANAN DEAD.

The members of the Mississippi State Medical Association will be grieved and shocked to know of the loss of one of their leaders, an ex-president of the Association and for years its Treasurer. He was known to all of the members and held in great esteem by them.

The following clipping from the Meridian Star will be of interest:

Dr. J. M. Buchanan, aged seventy, widely known Mississippi physician and specialist in mental diseases, American Red Cross leader and prominent in the business and social affairs of the city as well as a leader in Masonic and other fraternal and benevolent organizations of Meridian and the state, died at his home in this city, 1715 Twenty-third Avenue, Friday night, August 5, at eleven-thirty o'clock following an illness of several weeks.

Although Dr. Buchanan's death had not been unexpected for the past several days, it came as a great shock to all Meridian and will be learned with deep regret over Mississippi and the medical profession throughout the South. He was a man of brilliant learning in his profession and contributed much to medical science, especially in the progress made in the treatment of mental diseases.

Dr. Buchanan was born in Buena Vista, Chickasaw County, Mississippi, his father being T. J. Buchanan, planter and merchant, while his mother was Miss Martin of North Carolina. He was educated at the Buena Vista County School, at Summerville Institute of Noxubee County, the University of Mississippi, University of Virginia, where he finished literary and medical courses, finally completing his medical education in Vienna.

Returning to America he went to Arkansas, where he became assistant superintendent of the insane hospital at Little Rock, remaining there several years, after which he came to Meridian and became associated as assistant superintendent at the East Mississippi Hospital for Insane. Later he was appointed superintendent, which office he held for twenty-five years.

He was grand master of the Mississippi Masonic Grand Lodge, was an active Shriner, being a member of the Hamasa temple. Dr. Buchanan was one of the leading members of the First Presbyterian church.

In the business life of Meridian, he was an outstanding figure, being a director of the Citizens National Bank and also a director of the Meridian Fertilizer Company.

The deceased is survived by his wife, one son, James Buchanan, Meridian; one sister, Mrs. Gardiner of Blue Mountain.

Funeral services were held at the residence Saturday, August 6, at five p. m., conducted by Dr. A. A. Little, pastor of the First Presbyterian church and Rev. J. E. McJunkin."

I. W. Cooper of Meridian is acting Treasurer of the Association since the death of Dr. Buchanan.

Dr. R. R. Fitzpatrick, Director of the Health Department of Coahoma County, has resigned effective September 15, and will spend a year as an interne in an Eye, Ear, Nose and Throat Hospital in Memphis.

Died: William Monroe Wroten, Magnolia, Mississippi; Louisville (Kentucky) Medical College, 1872; Confederate veteran; aged 80; died June 18, of facial erysipelas.

Died: James McConnell Harrison, Hattiesburg, Mississippi; Atlanta (Georgia) Medical College, 1880; aged 71; died June 21 of chronic myocarditis.

BOOK REVIEWS

Principles of Chemistry: By Joseph H. Roe, Ph.D. St. Louis, C. V. Mosby Co. 1927. Illus. 378 p.

A valuable possession: a chemistry which every one can understand! The author in clear words outlines the principles of modern chemistry. After reviewing valence, ions, osmois, etc., of our college days he gracefully carries the reader through the esthers, aldehydes, amines, etc., of the modern chemistry and removes the mystery of the open and closed chains which surrounds the new pharmaceutical preparations.

The book is a short compend and is intended for students, but in the opinion of the reviewer all medical men should own one. The author gives easy methods of classifying hydrocarbons and from theory he brings the reader to practical application of chemistry to commerce and health.

The second part of the book is devoted to practical experiments which serve to remove the haze which usually surrounds chemical processes and crystallizes those principles to every day phenomena in medicine. The chapter on digestion is particularly clear and practical. In a graphic way the protein molecule is followed to its smallest division to the tissues; diets are given and the subject of vitamines is brought to date.

The book is short, clear, up-to-date and makes very interesting reading.

NARCISSE F. THIBERGE, M. D.

The Life and Work of Sir Patrick Manson: By Philip H. Manson-Bahr, D. S. O., M. D., F. R. C. P., and A. Alcock, C. I. E., L.L. D., Aberd. F. R. S. New York, William Wood & Co. 1927. 273 p.

Sir Patrick Manson was one of the great men in medicine. His contribution of the mosquito-malaria hypothesis and its boundless practical application later constitutes one of the greatest contributions to the health and happiness of mankind of all times. This, with many other contributions of Manson's, is the work of a master mind and a master man.

It is interesting and stimulating to read the "Life and Work" of this great man, which has been brought together and presented so well by the authors. It belongs in every medical library in the world and is a necessary part of the reading of every student of tropical medicine.

C. C. BASS, M. D.

The International Medical Annual, 1927: New York, William Wood & Co. 1927. 560 p.

This book is a digest or index of articles contributed by authors of outstanding ability in various branches. It is a compilation of briefs arranged in alphabetical order which makes the book easy to read and very interesting. The articles are splendidly written in a very lucid style and the book in itself is a splendid example of the reduction of voluminous works to small comprehensible articles. I can recommend it most highly.

HAROLD BLOOM, M. D.

Approaching Motherhood: Questions and Answers of Maternity: By George L. Brodhead, M. D. 3d ed. New York, Paul B. Hoeber, Inc. 1927.

A handbook of answers to hypothetical questions which prospective mothers might ask. It is prepared for the use of the prospective mother.

JOHN H. MUSSER, M. D.

Manual of Bacteriology: By Robert Muir, M. A., M. D., Sc.D., LL.D., F. R. S., and James Ritchie, M. A., M. D., F. R. C. P. (Ed.) Rev. ed. no. 8. New York, Oxford univ. pr. 1927. 821 p.

This latest revised edition seems very complete, without being massive. It contains sufficient illustrations, though many could be considerably improved upon.

The subject matter is well handled. About 250 pages of the text consider morphology, methods of cultivation, laboratory methods and immunity. The remainder of the book is a systematic consideration of the causative agents of diseases. The appendix is devoted to the bacteriology of the air, soil, water, sewage and milk.

The bibliography is certainly a very noteworthy feature, furnishing a detailed list of references to the authors mentioned in the text, and to articles in which other information may be found. This is arranged by chapters.

WILLARD R. WIRTH, M. D.

Lippincott's Pocket Formulary: By George E. Rehberger, M. D. Philadelphia, J. B. Lippincott Co. 1927.

A very practical, conveniently sized handbook of modern therapy. Divided into three sections, it contains much useful information, is well arranged and is up to date.

Section 1 presents the treatment of diseases and symptoms in alphabetical order. In addition to the many excellent prescriptions listed under each heading, a general outline of treatment is given where necessary. The prescriptions in correct medical Latin are culled from the many texts on

therapy and diagnosis, with acknowledgments. Both the apothecaries' and metric system are employed throughout. The list of diseases and symptoms considered is most complete, and very well cross-indexed.

Section 2 contains U. S. P. X. drugs and preparations, drugs of the National Formulary, and new and non-official remedies. These are listed as to solubility, dosage, and action and uses.

Section 3 is a compilation of miscellaneous information as to weights and measures, incompatibles and much other useful information which one often finds it necessary to refer to. The book should serve a useful purpose as a handy reference manual.

WILLARD R. WIRTH, M. D.

Evolution of Preventive Medicine: By Sir Arthur Newsholme, K. C. B., M. D., F. R. C. P. Baltimore, Williams and Wilkins Co. 1927. 226 p.

In a short book of some 200 odd pages the author outlines the struggles through which medicine passed before reaching its present almost perfect stage. The preventive feature is emphasized and made attractive by grouping the different epochs around some well-known figure in medical history. Valuable data are given and the book is profusely illustrated.

One is impressed from the perusal of this book with the romance of early desperate struggles towards light and the wonderful developments of modern methods of prevention.

In the second half of the book the author has selected several branches of medicine and around each has traced the different steps of progress made toward preventive methods in each.

The reader is made to realize the deep debt of gratitude and admiration the profession owes to the great men who marked the progress of preventive medicine.

The reviewer is looking forward for another book by the same author on "The Story of Modern Preventive Medicine" which will soon be published.

NARCISSE F. THIBERGE, M. D.

Management of the Sick Infant: By Langley Porter and Wm. E. Carter. 3d rev. ed. St. Louis, C. V. Mosby Co. 1927. 726 p.

This book, which was first published in 1922, occupies a unique niche in the hearts of all pediatricians, for, in the first place, it is the only book of its kind available, and in addition it is far more useful than the average text-book. In it will be found everything that is necessary to know in order to handle the sick infant.

The various symptoms, such as, vomiting, diarrhea, pain, fever, convulsions, etc., are dealt with in separate chapters, as are also the diseases of the different regions of the body.

Perhaps the most valuable part of the book is the chapter on Methods, in which is described the required apparatus, the exact technique, the advantages and disadvantages of every therapeutic procedure that is used in the practice of pediatrics. Formulas and recipes occupy an important part of the book, together with drugs and their dosage.

For the general practitioner who sees a great many pediatric cases this book should be indispensable; no pediatrician can consider his library complete without it.

L. VON MEYSENBUG, M. D.

The Normal Chest of the Adult and the Child: Including Applied Anatomy, Applied Physiology, X-Ray and Physical Findings: By J. A. Myers. Baltimore, The Williams & Wilkins Co. 1927. 419 p.

This is an excellent book and highly to be commended to practitioners as well as to medical students. Its scope is well indicated by its title, as well as by the opening paragraph of the first chapter:

"When one considers the multiplicity of human organs with their parts and relations and the time which elapses between the courses in human anatomy and the practice of medicine, or even the clinical years, one is really not surprised to find that some of the gross structures and many of the details have been forgotten by the upper classmen and men in actual practice. In view of these facts, frequent reviews of the anatomy of the organs and their parts closely related to the study of diseases of the chest are indispensable for the highest accomplishment in physical diagnosis of the chest."

The authors have presented the subject in a most useful and practical manner and one not duplicated elsewhere. In the main, they have adhered to their plan of presenting only the normal. Occasionally, however, a discussion of the abnormal is entered upon and at times therefore the text tends to go over into the domain of the usual text books on physical diagnosis of which there are so many. Numerous references and quotations from modern literature as well as the excellent bibliographies add greatly to the value of the book. No where else is there available in such a compass the information here gathered together. The book is to be especially commended to those who are conducting preliminary courses

in physical diagnosis in the first and second years of the medical curriculum; indeed, the book is the result of a course in the study of the normal chest given at the University of Minnesota.

I. I. LEMANN, M. D.

Practical Otology: By Morris Levine, M. D. Philadelphia, Lea & Febiger. 1927. 387 p.

In looking over this book the reviewer was first impressed by the foreword written by Dr. James F. McKernon, who will be remembered by those of us who did ear, nose and throat work with the A. E. F.. as Colonel McKernon, the kindly and considerate chief of the ear, nose and throat services of the A. E. F.

In this little volume Dr. Levine has condensed his experience as a teacher of otology in a most practical manner for the beginner; and even the seasoned otologist will find here helpful suggestions for treatment, and perhaps a viewpoint of some problems from a little different angle that will be of aid to him in their solution.

The book is essentially a compilation of lectures by Dr. Levine at the New York Post-Graduate Medical School and Hospital and was prepared particularly for the post-graduate student in otology, the undergraduate in medicine, and the general practitioner.

The reviewer commends it warmly.

H. KEARNEY, M. D.

How to Make the Periodic Health Examination: By Eugene Lyman Fisk, M. D., and J. Ramser Crawford, M. D. New York, The Macmillan Co. 1927. 393 p.

"Some books are to be tasted, others to be swallowed, and some few to be chewed and digested."

The latter is certainly befitting this manual, at a time when periodic health examinations are so rapidly growing in favor in both the ranks of the profession and the laity for self-evident reasons, a book of this nature, of whom one of the authors is a pioneer and leader in this great movement, is most timely and welcome.

The book is dedicated to Horace Dobell, M. D., and is followed by an extract from his medical writings of sixty-five years ago giving the first reference in medical literature to periodic health examinations. This guide is the outgrowth of an enormous experience, reinforced by the opinions of leading authorities and an extensive reading of the literature.

The opening chapters have to do with general remarks concerning the subject; taking of history and recording findings, and the necessary equipment and routine procedure.

Nothing is taken for granted. The smallest facts are noted. A perusal of the book impresses one with the outstanding fact that for the best results to be obtained, there must be a routine, which routine must be thoroughly systematized and which must be rigidly followed with every person presenting himself for examination. Only in this way can trivial and apparently unpretentious signs and symptoms be detected and remedied and this type of examination prove of value.

Regional examinations of the entire body next follows. Three important features distinguish this part of the book. First, a comprehensive and concise foreword on each region under discussion by a prominent authority. Second, at the end of each section is a list of supplementary investigations—a guide to the perplexed; and third, a list of reference to the literature concerning the particular region.

Next follows a section devoted to laboratory methods and standards. The indications, descriptions and interpretations of the various tests are dealt with. This subject has been condensed to the point that makes it most practical for the use of the general practitioner.

Following this is a section devoted to counselling. I consider this a most important part of the entire procedure. The very important subjects of hygiene, diet, exercise, constipation, overweight, etc., are dealt with at length and practical lists of instructions are given for the use of the patient.

In the appendix are given the results of statistical study of impairments revealed in average groups of persons apparently healthy. There are also a great many specimen forms to be used in this type of work. They are characterized by thoroughness and pertinent, brief, advisory remarks to the patient.

Tables of weights and heights and the report of a study of blood pressure findings with valuable information bearing on morbidity and mortality statistics is discussed.

A large bibliography on Periodic Health Examinations and kindred subjects is a feature of the book. A satisfactory index concludes the work.

This book should be read by every one interested in preventive medicine. It is comprehensive, clear, authoritative and concise, and is well worth the time spent on a well written subject that merits so much consideration.

I. L. ROBBINS, M. D.

Tropical Surgery and Surgical Pathology: By Karuna K. Chatterji, F. R. C. S. I. New York, Wm. Wood & Co. 1927. 244 p.

Of recent years, much has been written about tropical medicine; however, this publication is probably one of the first that has been brought out on Tropical Surgery and Surgical Pathology.

The chapters devoted to the treatment of the complications of amebiasis are clear, concise and adequate. This, alone, is well worth the time of any surgeon, as amebiasis through mostly confined to tropical and subtropical climates, has been known to be present in the coldest climate as well.

The differential diagnosis between the various forms of hernia and the several ilio-inguinal forms of swelling, in their growth and progress, is clearly expressed. Also, under filariasis, some surgical diseases endemic only in the East are clearly and well described.

The entire book is replete with many very excellent and wonderfully clear illustrations. This is especially true in the chapters on filariasis and tropical granulomata.

The author's discussion as regards the "choice of anesthetics" is rather disappointing and disconcerting, for he states that "chloroform is the standard anesthetic," and generally speaking "it is a good anesthetic and with the usual precautions regarding purity, the preparation of the patient and after treatment it is safe and useful." In this part of the world, it has long been discarded as being entirely too dangerous for routine use.

Major Chatterji's treatise is indispensable in the equipment of every tropical surgeon, and no medical library, especially in our own metropolis, can be complete without it, since it embodies all that is best in the knowledge and thought on the subjects discussed.

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PUBLICATIONS RECEIVED.

William Wood & Co., New York: "Physical Diagnosis," by Richard C. Cabot, M. D. "Manual of the Diseases of the Eye," by Charles H. May, M. D. 12th ed. rev.

Williams & Wilkins Co., Baltimore: "Standard Methods of the Division of Laboratories and Research of the New York State Department of Health: General Laboratory Procedures and the Methods Used," ed. by Augustus B. Wadsworth.

Harvard University Press, Cambridge, Mass.: "The Care of the Patient," by Francis Weld Peabody.

Paul B. Hoeber, Inc., New York: "Overcoming Tuberculosis," by Gerald B. Webb, M. D., and Charles T. Ryder, M. D. 3d ed. rev. "Lectures on Internal Medicine," by Knud Faber, M. D.

C. V. Mosby Co., St. Louis: "Compendium of Regional Diagnosis in Affections of the Brain and Spinal Cord," by Robert Bing.

Ceylon Journal of Science: "Researches on the Parasitology of Plague," by L. Fabian Hirst, M. D.

Boni & Liveright, New York: "New Medical Follies," by Morris Fishbein.

Commonwealth Press, Chicago: "Potassium and Tartrates," by Ralph W. Webster, Ph.D., M. D.

Physicians & Surgeons Book Co., Brooklyn: "The Human Body in Pictures," by Jacob Sarnoff, M. D.

Oxford University Press, New York & London: "Therapeutic Malaria," by G. de M. Rudolf, M. R. C. S., L. R. C. P., D. P. H., D. P. M. "Textbook of Psychiatry," by D. K. Henderson, M. D. (Edin.), F. R. F. P. S. (Glas.), & R. D. Gillespie, M. D. (Glas.), D. P. M. (Lond.). "Ker's Manual of Fevers," revised by Claude Rundle, O. B. E., M. D. (Lond.), M. R. C. S. (Eng.), L. R. C. T. (Lond.), D. P. H., 3d ed. "Diseases of the Newborn," by James Burnet, M. A., M. D., F. R. C. P. (Edin.) "Normal Midwifery for Midwives and Nurses," by G. W. Theobald, B. A., M. D., B. Chir. (Camb.), F. R. C. S. (Ed.), M. R. C. P. (Lond.), L. M. (Rot.). "The Thomas Splint and its Modifications in the Treatment of Fractures," by Maurice Sinclair, C. M. G., M. B., Ch. B. (Edin.).

REPRINTS.

"Esophageal Obstruction," "Development and Nature of the So-called Toxic Adenomas," "Genesis and Significance of Abdominal Adhesions," "Inquiry into the Nature of Chronic Appendicitis," "Relation of Dysmenorrhea to Interstitial Thyrotoxicosis as Proved by Therapeutic Measures," by Arthur E. Hertzler, M. D.